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THE MAGAZINE OF PRESSURE PACKAGING

October 1958

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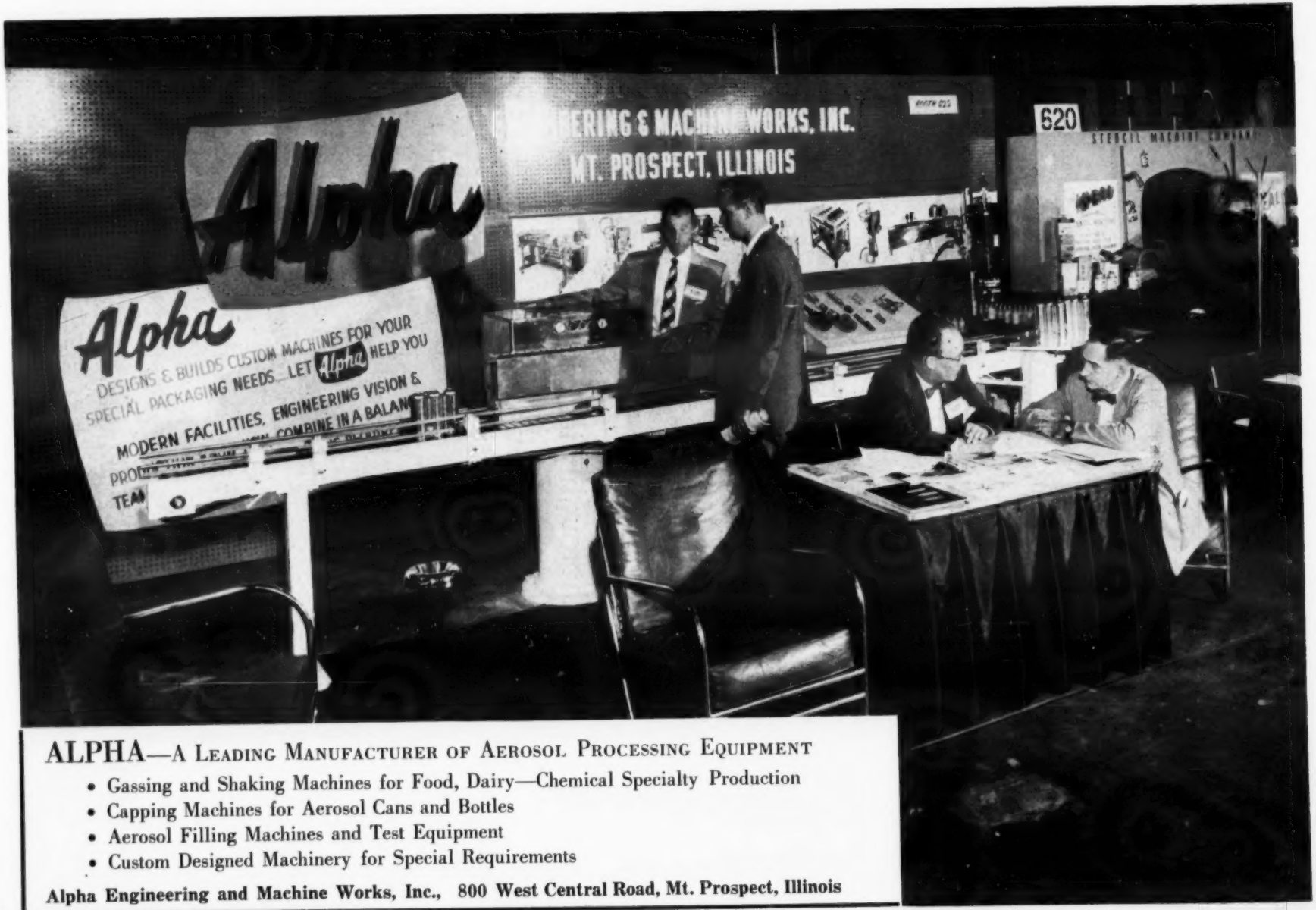

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COVER PICTURE

Plasti-Kote, Inc., Cleveland, have a new product this season, "Plasti-Kote Plant Spray." Recommended for use either indoors or outdoors, it is intended for control of mites, aphids, thrips, etc., as well as black spot on roses. Crown supplies the container and Newman-Green the valve for this new pressurized plant spray.

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The magazine of pressure packaging

AEROSOL AGE

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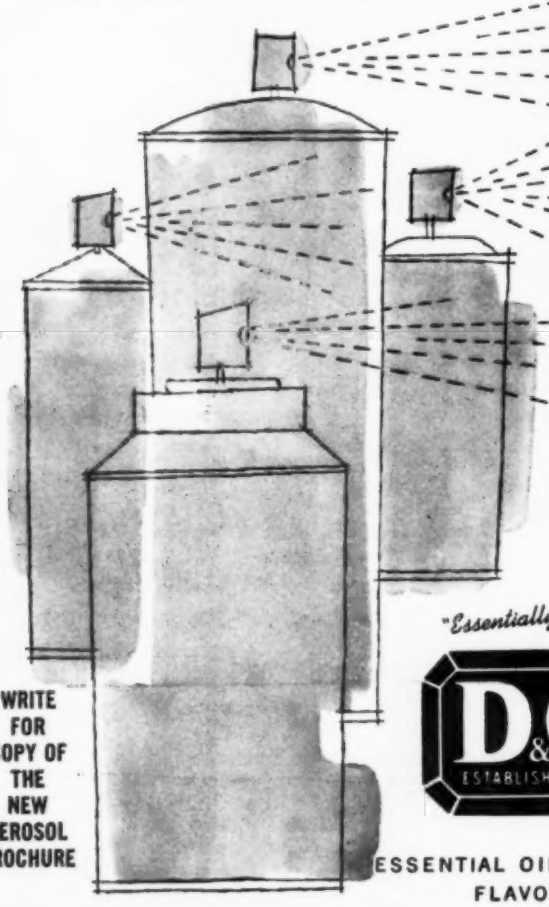

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BRICKBATS and BOUQUETS from the MAILBAG

We were extremely interested in your "Three Phase Aerosol" discussion and believe this may provide the answer to a product we have considered for some time. We would very much appreciate it, therefore, if you could give us the name of a contract filler familiar with the three phase method with whom we could work out our idea.

Or perhaps you could pass this inquiry on to Dr. Mina considering that his firm may be able to work with us. With kind thanks for your attention to this request, I am, yours very truly.

R. Brooks
ARWELL, INC.
Waukegan, Ill.

We were happy to see the illustration and story about our product, Styrofoam Flower & "Color" Spray, in the August issue of *Aerosol Age*. However, we should call to your attention that Styrofoam is not our trademark as indicated. "Styrofoam" is the trademark of the Dow Chemical Company. Its use in our product is strictly in the descriptive form meaning that the product is intended for use in spraying "Styrofoam" and flowers.

R. S. Rothschild
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Chicago, Ill.

We wish to thank you, and congratulate you at the same time, for the magnificent job you are doing in helping the aerosol industry throughout the world with your *Aerosol Age* publication.

Those of us in foreign countries, particularly, appreciate a magazine which is dedicated exclusively to this specialized field, since it is more difficult for us to obtain information on matters concerning the aerosol industry than it is for those living in the United States.

Your articles are very well written and extremely interesting. Keep up the good work.

Director-Gerente
AEROSOL S.A. LTDA.
CONTRACT FILLERS
Lima, Peru

Your article on "Pressure Testing of Glass Aerosol Products," published in *Aerosol Age*, July 1956, was of great interest to us. In the second paragraph you state: "Since the I.C.C. requires a metal container for compositions having pressures above 25 lbs. p.s.i. gauge at 70 F. . . . " "There is a very definite trend to limit pressures to 15 lbs. p.s.i. gauge at 70 F . . ."

Are you sufficiently familiar with this ruling to interpret how it might affect products which are packed at atmospheric

(Continued on Page 48)

In the Spotlight this month

- **Pharmaceutical manufacturers** . . . considering the addition of aerosol products to their lines will find sound advice in recommendations of panel members participating in the Aerosol Seminar at the Packaging Forum held in Cleveland earlier this month. See pgs. 26-28 for a full and timely account.

- **Pressurized Plant Sprays** . . . are gaining increasing popularity with the home gardener, and opening up a new insecticide market. With a high concentration of contact toxicants, they offer rapid knockdown and kill, combined with safety for use around the home and garden. For highlights on their development see pgs. 30-31.

- **Plastic Coated Glass Aerosols** . . . the story behind their development by Wheaton Glass is told in an interview based on a visit by one of **Aerosol Age's** staff to the Wheaton plant. Most recent development is a new ultraviolet ray screen which protects light-sensitive formulations while still providing maximum visibility of contents. Pgs. 16-18.

- **Three-Phase Aerosols** . . . Another contribution on this subject, with our discussion this month centering on the merits of butane as a propellant. The author suggests that three-phase aerosols of the future may offer sprays equal to those of today's two-phase products. Pgs. 12-15.

- **Reusable Valves** . . . Further comments on reusable valves, with the affirmative side of the subject being upheld by the British concessionaires for the "Vap-Sol" valve. See pg. 19.

- **Aerosols in Sweden** . . . A review of the Swedish market by Andrew Wolff of Pegasus International. It is suggested that American firms planning on introducing their aerosol products to the Scandinavian market may find Sweden a logical country in which to commence operations because of its favorable tariff position. Pgs. 32-33.

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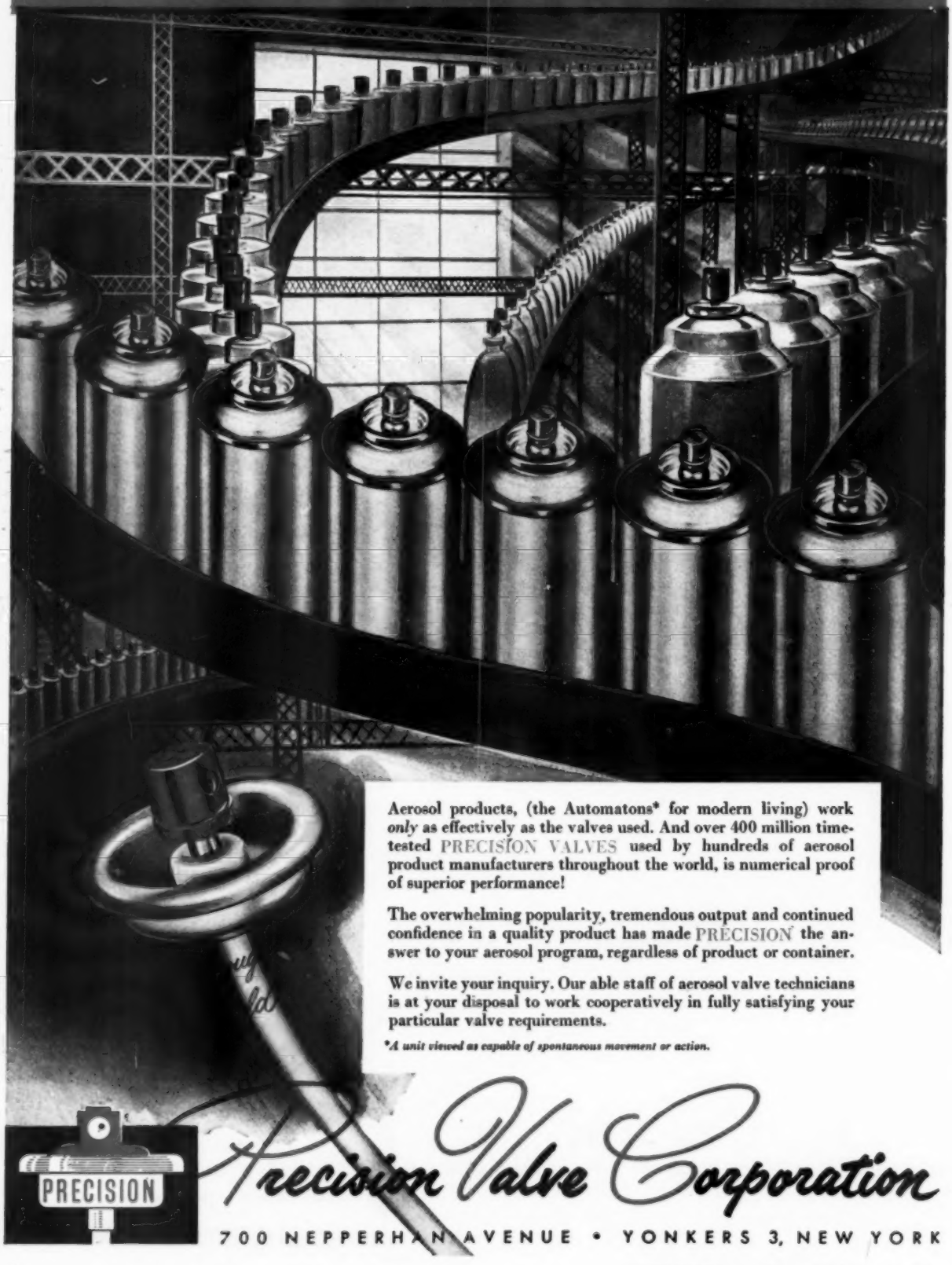

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Editorials

THE board of governors of C.S.M.A. are currently considering a plan advanced by the Aerosol Publicity Committee to embark upon a major publicity program for pressurized products. The purpose of the plan is to sell more potential buyers on the ease of use of aerosols, and also to attempt to educate them on correct use of aerosol products. To finance the program, funds would be solicited from the C.S.M.A. membership and from others concerned with the expansion of the industry. It is reported that the framers of the plan have in mind an initial fund on the order of approximately fifty thousand dollars.

We are in complete agreement with the purpose of the proposed program. Certainly aerosol manufacturers have a big job to do in publicizing the products of the industry, and particularly in instructing the buying public in their correct use. In any new field such as this it is important to guard against dissatisfaction of the buying public which may come through misuse of the product. And the proved way to do the job,—a way that has succeeded time after time in other industries—is through just such a program of articles in the press, in magazines, films, TV shorts, speakers bureau, etc., as the suggested program would involve.

Those who have seen other programs of this type develop,—and there are a number on the committee with such experience—are no doubt well aware that in these publicity programs it is not quite so important how you start. The follow through and completion of the program are what count most. A few thousand dollars sunk in a brief one-shot program would be largely wasted. It is the continuing program, with its repeated, month-after-month and year-after-year impact that gets the job done.

Thus we would counsel the committee, if they need any counseling, that it is extremely important to be sure of continuing support on any such program for at least a two-year period before it is started at all. And, remembering the famous Terry Fly Spray patent suit of twenty years or so ago, it should not be necessary to suggest that no commitments be made or money spent until it is actually in the till,—and in cash rather than promises.

In all such programs the question eventually arises as to who will run the program, who will spend the budget, and how. There is always the choice between going to experts in the publicity field, or attempting to operate a "do-it-yourself" program. As we see it, the choice here has to be based on how large a budget is involved. There is no doubt that the experts, with their long experience in similar work, can do a superior over-all job; but neither is there much doubt that, because of their high overhead, they often have to take such a big bite out of a relatively small budget that a disproportionate share remains for actual promotion of the industry's products.

Many experts in the association field have expressed the opinion that unless a fund in the neighborhood of two or three hundred thousand dollars can be counted upon, it is normally better to handle any smaller program out of an association office, perhaps with a new employee or two assigned exclusively to the work. Both the National Plant Food Institute and the National

(*Turn to Page* 44)

THREE PHASE AEROSOLS

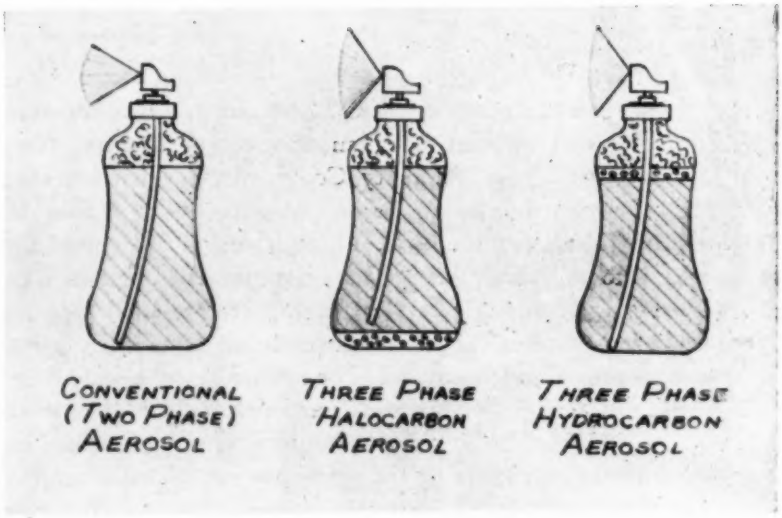
This article does not cover the use of fully emulsified propellants, as described in General Chemical Division's recent bulletin, as these are not true three-phase aerosols. For accurate economic comparisons, further work will have to be done.

Introduction

THE earliest notable work on three phase aerosols was done by Samuel E. Eaton in 1950, (1). He described the essential characteristics of such systems: a dispensing device containing a liquid to be expelled, a small amount of liquid propellant, and propellant gas under equilibrium pressure. The use of glass containers was also mentioned.

During 1951 — Eaton's invention was greatly improved upon by Francis A. Mina and his associates. A special valve was developed (2), the use of boiling chips was suggested, and more fracture resistant containers were prepared. With these advantages it became possible to place several three phase products on the market. Unfortunately, due to the cost of Mina's valve and other packaging materials, these aerosols were high priced and generally limited to a certain size.

The small two phase glass aerosol appeared in 1953. Several firms engaged in producing valves for these products became interested in the idea of developing an inexpensive actuating button suitable for spraying three phase systems. Some working models were brought forth in that year, but it was not until early 1955 that two low-cost production buttons were finally unveiled, (3, 4). These buttons could be applied to both can and bottle valves. Additional production buttons are now being tested, with at least one scheduled for completion by late 1956, (5). With imminent availability of improved containers and valves, attention again focused upon the composition — particularly the propellant composition.



Up to this point nearly all three phase aerosols had been pressurized with sym. dichlorotetrafluoroethane, (Freon-114, Genetron-320). This propellant left much to be desired. For many purposes normal butane was considered a better selection. Comparisons are presented in Table 1:

TABLE ONE

Typical Properties	Dichlorotetra-fluoroethane	N-Butane (Pure)	N-Butane (Tech.)
Chemical Formula	$CClF_2$-$CClF_2$ plus some CF_3-CCl_2F.	C_4H_{10}	Mainly C_4H_{10}
Purity	100%	99% min.	95% min.
Specific Gravity (70°F.)	1.467	0.577	0.577
Boiling Point (1 atm.) (°F.)	38.4	31.1	30.9
Pressure psi-g. (60°F.)	8.0	10.6	10.9
(70°F.)	12.4	16.9	17.3
(130°F.)	59.0	67.5	68.4
Vapor Density (gm/100 ml over liquid at 70°F.)	1.310	0.517	0.517
Specific Heat (cal/gm 80°F.)	0.238	0.550	0.550
Solubility in Water (ml of gas/100 ml 70°F.)	2.00	15.0	15.0
Hydrolysis	nil	none	none
Flash Point (°F.)	none	-101	——
Price per lb. (150 lb. lots)	$0.76	$0.50	$0.20
Odor	Bland	Bland	(Kerosene)

By Montfort A. Johnsen

Montfort A. Johnsen has been a major contributor in the field of three phase aerosol development, and has pioneered research on systems employing lighter-than-water propellants. He graduated from the University of Denver with a B.S in 1948; from the University of Colorado with an M.S. in 1949; then spent several years at the University of Illinois, holding a teaching fellowship from 1949 to 1952.

Mr. Johnsen joined Continental Filling Corporation in 1953 and became supervisor of their Research Department in 1954. It was at this time that he became interested in the possibilities of three phase aerosols.

When the Peterson Filling & Packaging Company was formed in 1955 Mr. Johnsen left to assume the position of director of research with the new company. He is a member of the A.C.S., Alpha Chi Sigma, and several other scientific societies.

With the advent of effective corrosion inhibitors and improved linings, it has recently been possible to market three phase systems in cans. Several such products have been stored over two years with little or no evidence of corrosion, (6, 7). The increased pressure tolerances of metal containers have made possible an ever widening range of useful propellants.

Propellants

A number of halocarbon and hydrocarbon propellants have now been tested in conjunction with three phase aerosols. Some are too high in equilibrium pressure to be used alone, so they are found only in mixtures. Propellants subject to hydrolysis are unacceptable, since they contaminate the liquid phase with traces of acid and also invite corrosion of cans. Properties of typical propellants are listed in the table below:

In the pure form all three phase propellants have bland odors. Technical grades of the hydrocarbons, aside from containing small amounts of isomers or other closely related hydrocarbons, also run about 0.008% in sulfur content (8). These sulfur bearing compounds give the material a kerosene type odor. Generally the odor of the propellant has little bearing on that of the finished product. The hydrocarbon is almost never released. Repeated tests have shown that the spray from aerosols containing technical hydrocarbons is still essentially odorless.

The inflammability of hydrocarbon propellants represents their greatest disadvantage. The aerosol filler bears the brunt of this. Safety measures necessary for controlled handling and loading are staggering. Usually small, well ventilated structures are built, away from congested and warehouse areas, and used specifically for hydrocarbon loading. An additional hazard lies in the fact that propane and butane gases are roughly twice as heavy as air. They tend to settle at floor level and build up to explosive concentrations.

By using a "propellant carrier" of a less volatile hydrocarbon such as petroleum ethers, a controlled amount of non-inflammable propellant can then be loaded and caused to assume floating characteristics. The hydrocarbon can be used to purge air from the can prior to capping. Because of this and the depressive effect, higher pressure propellants can be used. This method of filling has an appeal in that it is less dangerous than handling straight hydrocarbons.

On the other hand, three phase hydrocarbon aerosols are quite safe. The liquid material as normally sprayed is water-based and thus non-inflammable. Pressing the button with the can in an upside down position releases hydrocarbon gas at a very low rate. Once ignited, it will produce only a tiny flame like that from a small laboratory burner. The flame is

TABLE TWO

Name	Formula	(psi-g. 70°) Pressure	Spec. Grav. (70°F.)	Solubility In Water*
Propane	CH_3-CH_2-CH_3	108.3	0.506	6.5
Isobutane	CH_3-CH=$(CH_3)_2$	31.1	0.555	—
Normal Butane	CH_3-CH_2-CH_2-CH_3	16.9	0.577	15.0
Genetron-100	CH_3-CHF_2	62.5	0.901	70.0
Genetron-101	CH_3-$CClF_2$	30.2	1.121	42.6
Freon-12 or Genetron-12	CCl_2F_2	70.7	1.325	6.0
Freon-114 or Genetron-320	$CClF_2$-$CClF_2$	12.4	1.467	2.0

* ml. of gas soluble in 100 ml. of water at 70°F.

Effective corrosion inhibitors and improved linings have made possible the marketing of three-phase aerosols in cans.

soon extinguished when the hydrocarbon supply becomes exhausted.

The amount of propellant to be used in a three phase aerosol depends upon a number of factors. The theoretical weight is that necessary to fill the container with gas while still maintaining equilibrium pressure. This insures complete and satisfactory delivery of the contents. A safety factor is next established to compensate for the estimated leakage over an arbitrary period, say two years. Final allowances are made to cover possible misuse, loading variations, and the solubility of the propellant in the water-based material. Assuming a temperature of 70°F., the table below represents our impression of what these amounts could be for the two most popular three phase propellants.

It is immediately evident that the weight requirement tor the halocarbon propellant is roughly twice as great as that for butane. Can leakage with three phase normal butane formulas has been found to be much less than anticipated. This is attributed to the lower vapor pressure of the hydrocarbon and to the fact that it does not come into contact with several areas where can leakage sometimes takes place.

TABLE THREE

Propellant	Increment	100 ml. Bottle	400 ml. Can
N-Butane	1. Theoretical Weight	0.52 gm.	2.08 gm.
	2. Leakage Allowance	0.50 gm.	3.00 gm.
	3. Misuse Allowance	0.50 gm.	0.50 gm.
	4. Loading Allowance	0.50 gm.	1.00 gm.
	5. Solubility Allowance (In water)	0.02 gm.	0.08 gm.
	6. Probability of No. 2, 3 & 4 not occurring simultaneously	-0.50 gm.	-1.00 gm.
	TOTALS:	1.54 gm.	5.66 gm.
Freon-114 or Genetron-320	1. Theoretical Weight	1.31 gm.	5.24 gm.
	2. Leakage Allowance	0.50 gm.	4.00 gm.
	3. Misuse Allowance	1.00 gm.	1.00 gm.
	4. Loading Allowance	0.50 gm.	1.00 gm.
	5. Solubility Allowance (In water)	0.00 gm.	0.01 gm.
	6. Probability against maximum 2, 3 & 4 occurring simultaneously	-0.50 gm.	-1.00 gm.
	TOTALS:	2.81 gm.	10.25 gm.

Pressure:

Most three phase aerosols are pressure loaded, although with sym. dichlorotetrafluoroethane this treatment is not necessary. Unless provision is made to purge the air, at added expense, this air will cause a pressure increase in the completed package. The partial pressure of air as it is called, amounts to about 12 or 13 psi. at ambient temperatures. That this is less than 14.7 psi. is reconciled by the fact that some of the air dissolves. During the life of the aerosol this partial pressure sinks to 1 or 2 psi., depending upon the size of the original head space. The total pressure of an aerosol powered by normal butane will therefore drop from about 30 psi-g. to 19 psi-g. during total use. This will have only a minor effect on the spray, but the delivery rate is cut by a third. Using sym. dichlorotetrafluoroethane, the rate is reduced by about one half.

Present day three phase valves function satisfactorily down to about 8 psi-g., provided the liquid material is not more viscous than water. This pressure limit is reached at 60°F. by refrigeration filled sym. dichlorotetrafluoroethane aerosols, and at 55°F. by purged aerosols powered with normal butane. The true ultra-low pressure system does not obtain unless the package is air-free.

It has been shown that boiling chips are a desirable ingredient of three phase aerosols where the propellant is a halocarbon, (9). These particles act catalytically to maintain equilibrium pressure during extended use. Without them the spray either

degenerates or stops entirely, sometimes when as little as 12% of the package has been sprayed. The chips must be in contact with the propellant to perform their function.

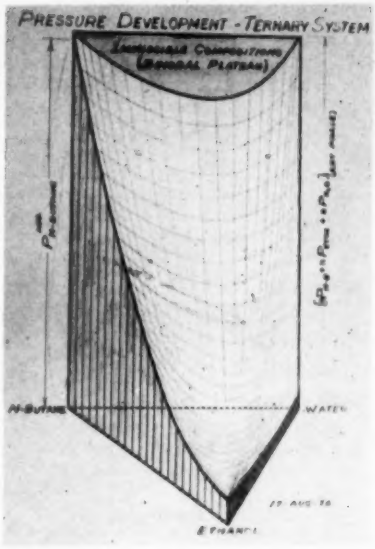
This drop in pressure is almost unknown in aerosols powered by hydrocarbons. Possibly this is due to the lessened tendency of hydrocarbons to superheat; to their higher specific heat; or to the fact that the liquid is in contact with its gaseous phase. Undoubtedly this is a fortunate circumstance since a floating boiling chip would be difficult to find.

Slightly Soluble Systems

The only requirements for the liquid material in a three phase aerosol are that it be *essentially* immiscible with the liquid propellant phase and of a fluidity suitable for spraying. A certain amount of cosolvent, generally an alcohol, can be tolerated. Cosolvents are usually necessary to bring about solubility of medicinals, perfume oils and other organic compounds in the liquid phase, or to confer special properties in application. Three phase aerosols bearing at least 55% by weight of alcohol are on the market.

Cosolvents act in two ways: they dissolve some propellant in the liquid material, and they cause liquid material to enter the propellant. Propellants having relatively high water solubilities, (normal butane, Genetron-100 and Genetron-101), can be expected to dissolve to a greater extent in cosolvent systems. An allowance must then be made to cover the amount of propellant lost in spraying. The addition of foaming agents to three phase aerosols enhances the dispersion of propellant in the liquid. Such systems produce a spray which foams slightly upon striking a surface. Several window cleaning preparations make use of this principle.

Any organic ingredient in the liquid material will tend to partition itself between its original phase and the liquid propellant phase. The ratio of concentrations in the two solutions, the distribution ratio, can be determined for a given system and



applied to other conditions provided the change in temperature or concentration of solute is not too great. This has an immediate bearing on products where a guaranteed amount of solute must be present in the liquid spray. Perfumes have sometimes given unbalanced fragrances as a result of preferential extraction of certain components.

The propellant pressure is not significantly altered by this type of contamination except in unusual cases. By reference to the accompanying perspective drawing of a space model of the ternary system: normal butane, alcohol and water, where the ordinate is pressure, it is evident that the total pressure becomes the approximate sum of the individual pressures, where an immiscible system prevails.

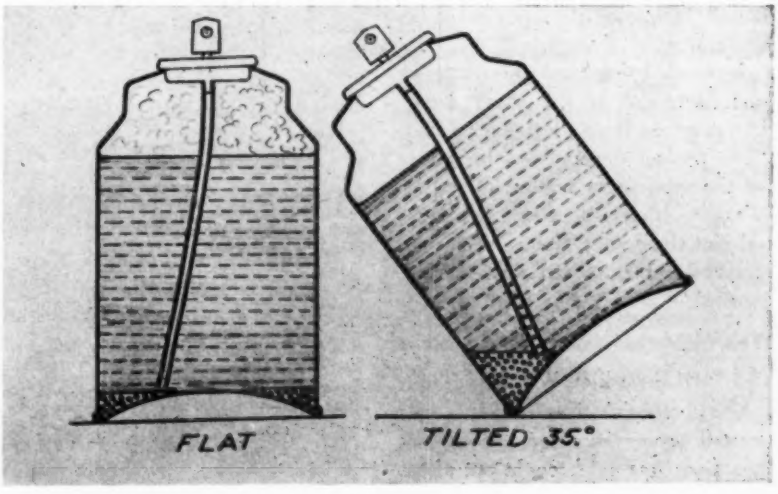
Floating Propellants

One of the major difficulties with a heavier than water propellant system is that compromises must be made to keep the propellant from passing up the delivery tube and out the valve. From the standpoint of spraying a maximum amount of liquid, the best solution is to use a straight tube and attach it so that it surrounds the vertical axis of the dispenser. If the dispenser has an arched base, as most do, then the propellant can be localized around the periphery of the base and only liquid material will be expelled through the tube even though the package may be tilted. Unfortunately, polyethylene delivery tubes are cut from reels and thus assume a crescent shape upon being attached to the valve. More important, a certain amount of material is always retained in the aerosol when no more can be sprayed out. This is especially true for cans.

Hydrocarbon propellants float on the surface of even the lightest water base solutions. The delivery tube problem is eliminated. At exhaustion the liquid spray ceases and gaseous hydrocarbon is forced out for a sec-

(*Turn To Page* 43)

A disadvantage of halocarbons in three phase aerosols.



Plastic Coated Glass Aerosols

Wheaton Plastics Co. announces 75% expansion in manufacturing facilities for plastic coated glass containers. Will offer new containers to handle higher pressures, easier method of valve attachment and new ultra violet ray absorber for clear plastics.

A SEVENTY-FIVE percent expansion in facilities for production of plastic coated glass aerosol containers at the Mays Landing, N. J., plant of Wheaton Plastics Company has just been announced by William Glover, in charge of sales for the company. Interviewed at the Millville home office of the parent company, Wheaton Glass Company, Mr. Glover reported that their rapidly expanding aerosol division is receiving new and improved equipment and will soon occupy additional space to handle increasing demands for their containers.

Richard Taylor, put in charge of manufacturing at the Mays Landing plant early in September, said, "The aerosol division has been given the green light here at Wheaton. We are enthusiastic about our aerosol container—and tremendously enthusiastic about the aerosol field in general."

The Wheaton Aerosol Container

WHILE work on Wheaton's plastic covered glass container was started seven years ago, the current container was not brought out of the laboratory stage until 1953 by Joseph F. West. Equipment for the manufacture of the containers was then designed and built by Wheaton as a team proposition and the container in its present form was announced for marketing May, 1954.

The plastic coating of the glass container is done on a specially built machine—the only one of its kind at this time. Bottles are placed on a conveyor which takes them through an oven, then dips them in a special liquid, polyvinyl chloride formulation. They are then carried back through the oven for drying and curing—and on to the labeling machine for either silk screen or paper labels.

Advantages of Glass Containers

IT has long been recognized by the cosmetic, pharmaceutical, food and chemical specialties industries that some formulations are highly corrosive in contact with metals. Metal has a detrimental effect on some of the chemicals or products contained. These problems can largely be overcome by the use of glass—but it was found necessary to add a plastic coating to provide the necessary safety factor.

There are three factors to the safety of this package. First, the prime surface of the glass is protected by the plastic from scratches, chips or pits which would weaken the tensile strength of a non-coated

bottle. Second, the resiliency of the plastic coating has a cushioning effect which helps prevent breakage if the package is dropped. Third, in the event of breakage, the tough coating, with rugged elasticity, expands to accommodate the released force and minimizes any tendency toward flying glass. Small vent holes in the coating release the gas and the plastic coating deflates to its original shape. The number and size of perforations in the coating depend on the pressure of the particular formulation.

Containers are currently available in sizes from 10cc to 8 oz., in a variety of shapes from rounds to tapered ovals. The larger the bottle, the more limitations there are in shapes—with extreme variations in shapes possible only in sizes under 5 ozs.

The safest shaped container for retention of pressures would be a perfect sphere. Any deviation from this basic design weakens the container, with the most undesirable design being two flat surfaces paralleling each other with minimum space between. The basic rules for safety in design are that all radii should be a minimum of 3/16 of an inch, shoulders should have a minimum 20 degree taper and all large flat areas should be avoided.

The aerosol division of Wheaton Plastic Company is the most rapidly expanding division in the vast Wheaton family—and will soon employ over 300 workers. The overall Wheaton enterprises employ approximately 3000 people at Wheaton Glass Company, Millville, N. J., Wheaton Plastics Co. and Wheaton Engineering Corp., at Mays Landing, N. J., Stowman Shipyards, Inc., and Dorchester Engineering Co., Dorchester, N. J., and Wheaton Do Brazil, S. A. in Sao Paulo, Brazil.

Specifications for coating of each particular bottle design are determined by individual drop tests and tensile and elongation tests of the plastic coating. The thickness of the skin required depends on the size and shape of the bottle and the pressure of the formulations. Coatings run from 1/32 of an inch to 1/16 of an inch.

The Wheaton container will withstand internal pressures far in excess of the normal 15 to 25 lbs. loading pressure for low and medium pressure packaging. It is recommended for pressures up to 25 lbs. per square inch at 70° F.

The quality control laboratory regulations at Wheaton together with the controls exercised by custom fillers have established a remarkable safety record for the plastic covered glass container. In two full years of operation, not a single accident claim has been filed.

This safety record, together with the non-corrosive qualities of the glass and the obvious sales advantages, such as versatility of design and decoration, brilliance of color,

View of plastic coating machine. Bottles are carried on conveyor in foreground to oven and plastic dip in background.

distinctiveness of package available to the individual customer,—plus the warmth appeal of the plastic, assures the Wheaton container of an increasing market, particularly in packaging of cosmetics, pharmaceuticals, and food aerosols.

Wheaton makes a wide variety of uncoated plastic bottles, but does not recommend any of these for use in aerosols under present day formulations.

Example of containment of glass fragments by plastic coating after drop test.

New Developments in Container

A NEW container will be available in quantity after the first of the year. Wheaton research has designed a new approach to handle higher pressure formulas and to make available new shapes in containers. A new patented method of securing the plastic to the valve will be employed. The current method requires a special valve as a clamping device to fit over the plastic coating and hold the plastic to the glass. The new method consists of a perforated metal ferrule attached to the glass before the plastic coating is applied. The plastic extends up and through the perforations in the metal ferrule providing a secure bond between the ferrule and the plastic. The attachment of the valve then is purely as a valve function rather than as a clamping device. This means simpler valve design and easier application for the filler.

Another new development is in the plastic coating itself. Pharmaceutical and cosmetic manufacturers often prefer a clear coating for visibility of contents—but many formulations unfortunately are light-sensitive. A new ultraviolet ray absorber has been developed which will not impart color to the plastic. It is claimed to absorb more ultraviolet rays than standard amber glass. For details, see the report of A. R. Marks of Wheaton Plastics made in an address before the Packaging Institute in Cleveland on September 11, 1956. (Details on page 28)

A wide variety of shapes and styles are available in the Wheaton line of plastic coated glass containers.

FURTHER COMMENTS ON reusable valves

READERS who noted our article on re-usable aerosol valves in the August issue of AEROSOL AGE may be interested in further details on the affirmative side of the question. Maurice Norton of M. & R. Norton, Ltd., 9 Park Hill, London, S. W. 4, England, gives more of the story on the advantages claimed for the "Vap-Sol" valve in the following article. The Norton firm are concessionaries for Great Britain and the British Empire for the "Vap-Sol" valve. The opinions expressed are of course their own.

Your recent article on the Vapsol Valve (AEROSOL AGE, August, 1956, Pg. 10) has left a void which we think can be answered by practical experience which we have in this type of valve which is now being used in England. Signor Galeazzi's re-useable valve is of course detachable, and its prime feature is economy for both the manufacturer and the consumer. The consumer eventually benefits by this new method of dispensing aerosols for it is necessary to buy the complete unit only once. Thereafter, the user buys a sealed refill bottle which is made into a complete unit by the mere screwing on of the aerosol cap.

Once the product is firmly established on the market, the manufacturer will find that 80% of his demand will be for refills. This should increase consumer demand for his product because of the reduced price.

Vapsol filling must be done with the special Vapsol filling plant which has certain devices that are far in advance of any others on the market. It is our opinion that the Vapsol valve will eventually find favor in the U.S.A., for although American purchasing power is higher than in England, the American consumer is a very thrifty person.

There is no question of returning empties, and this is where we believe that your article was ambiguous. The consumer purchases, in the first instance, the complete unit with valve. When this is finished, she unscrews the cap valve, *throws the empty bottle away*, and purchases a refill bottle already sealed. She then screws the aerosol valve on to her new refill and "presto" she has a new aerosol. In no instance are the bottles returned to the manufacturer. This is a very costly business and is not necessary.

The Vapsol valve has the added feature of a narrow polyethylene tube which allows for the small intake of the product, and the concentric nozzle dispenses a "Spraygrance" atomization rather than a direct jet. These refinements are available only on the Vapsol valve.

Manufacturer's cost on the complete unit with valve inclusive of filling charge, is only about 20¢ more than the cost of the refill. Allowing for a 50% increase for jobber and retailer's mark up—this would be 30 cents. Therefore, if the product sold at $2.00 for the refill, the price of the complete spray unit with a permanent aerosol valve would need to be only $2.30. This small differential should not produce any objection from retailers.

With regard to the inadequacy of the safety factor of the re-usable valve, this is used as a "red herring" by other valve manufacturers. On the bottom of the valve where it meets the glass bottle, there is a paper adhesive band with the words "DO NOT UNSCREW UNTIL EMPTY". We believe that anybody with common sense would not unscrew the valve if requested not to do so. In fact, if they do, nothing happens except a hiss, i.e., the gas escaping, and the natural tendency would be to tighten the cap immediately.

The Vapsol valve is now being employed by many well known perfumery companies such as Dorothy Gray, Charles of the Ritz, Lubin, Cavalcade, Marcel Rochas, Raphaelle. Many of these names are known in the U.S.A., and we feel sure that this valve has the edge on any other in existence. Furthermore, interest is now being shown by medical and pharmaceutical companies who wish to use glass bottles for their products. We believe in the near future the Vapsol valve will come into outstanding recognition and perhaps play an important role in many branches of surgery.

(*Turn To Page* 45)

African Pyrethrum

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Pressure Packaging Overseas

Foam products lagging in European aerosol lines, reports Dr. Tom C. Clark, overseas correspondent for Aerosol Age. U. S. manufacturers of shaving soaps still seem to have a virtual monopoly on the European market.

One of the striking features of Europe's aerosol product development is the backwardness of the foam product line—the shaving soaps, shampoos, hand - creams, upholstery cleaners, leather soaps, etc. With market development and newspaper advertising pioneered by US shaving soap manufacturers, the way appeared open for the rapid introduction into the European market of foam products locally packaged. The fact that pressure loading units predominate in the plants of European fillers made such a development seem all the more likely. However, with but two exceptions: Germany and Denmark, we have not been able to find any European produced foam products.

In Germany, "Kaloderma" has an excellent aerosol shaving soap, rivalling the best of the US products, but at retail it sells for $1.00 (DM 4.20) per 6 ounce can—still too high for the German market. In Denmark, the international house, Nivea, has also successfully launched a shaving soap with an advertising campaign which offers a free can if the one purchased does not last 3 months. Replacements are reported practically nil and mostly attributable to experimenting wives and neighbourly demonstrations which help the sales cause. With the exception of these two products in these two countries, however, US shaving soap manufacturers still have a monopoly on the European market.

Generally, the US companies export their concentrates, cans and valves and have a European contract loader package their product. In the UK, however, "Palmolive" aerosol shaving lather is packed in a locally produced aluminum can with very good results. In most European countries (except Holland), good aerosol containers are now available at reasonable prices; and as ocean freight is based on space, not weight, it seems these US companies are paying for a lot of air in their freight charges. Also, foam valves are now available in Europe. Within a few weeks, the DeMert & Dougherty P-4 foam valve will be German produced under license. Actually, US shaving lather manufacturers would need only to export their undiluted concentrates. The savings in cost should be considerable, permitting increased volume at a lower retail price.

However, one European house now offers a complete line of concentrates for aerosol foam products, and we look for many more fillers and private label aerosol packagers to get into the game soon in a number of countries.

The US shaving soap companies have built their predominant European position on their good newspaper and window display advertising, a lesson the Europeans generally still do not want to learn. An example has just been furnished them this so-called "summer" with "Spray-Tan" attractively packaged in Italian 3 and 5 ounce one-piece aluminum cans, and Swiss filled. This product has been the hit of the season, probably running around half a million containers which is big stuff over here. The factor which helped most to put it over, outside of the quality of the product itself, was an organized advertising campaign. The attractive label on the container was repeated in large window display posters and in newspaper advertising illustrations. Although the price was high, people bought. If they will buy sun-tan sprays, they will also buy other sprays. We have heard of many plans for 1957, and hope they materialize with a new rush of advertising material.

Lower German Import Duties

Up until now, German valve prices have been geared to US valve prices plus freight, insurance, custom duties, etc., with the duties taking the largest bite at between 20 and 25 per cent, depending on type. Now they have been lowered to between 14 and 18 per cent. Instead of calculating a rough all-inclusive 30 per cent mark-up as before, it is now only about 20 per cent. This should result in about an 8 per cent reduction in price, bringing the price down to around 25 Pfennig ($0.06), in line with but not lower than the Italian

(*Turn To Page* 44)

OPPORTUNITY

UNLIMITED...

IN AEROSOLS!

Here's how you can get into this fast growing field!

Want your share of the $250,000,000 aerosol market? Looking for the best way to get in on skyrocketing aerosol sales . . . up 32% in 1955 over '54 . . . up to 240,000,000 units with no end in sight?*

Then follow the course of so many successful aerosol marketers—take advantage of the special services that General Chemical puts at your disposal. Here's how we can help you enter the field . . . quickly and *economically:*

Expert Technical Service—General Chemical has one of the most complete aerosol development laboratories in the country. Its staff and facilities are at your service—without cost or obligation—to help you develop the right propellants and formulations for your products.

Market Information—Helpful facts and figures on the aerosol market—including data on many promising new types of aerosols—are available to present and potential aerosol marketers and their advertising agencies. You will find this information invaluable in surveying the field and planning your marketing program. Special presentations arranged on request.

Technical Data—The results of our continuing research into new and better aerosols are published regularly in special bulletins and reports. Ask to be put on the mailing list for this advanced information. Also available to newcomers in the aerosol field are data on sources of aerosol containers, valves, contract filling, etc.

Field Assistance: General's aerosol experts are always available to help solve problems involving the storage and handling of propellants in your plant and filling line.

The Right Propellants—"Genetron" propellants are the first choice of many leading fillers and marketers for formulating household, drug, cosmetic, agricultural, industrial and other types of aerosol products. They provide the right propellant for every aerosol need, every pressure and compatibility requirement, every type of container.

Don't delay. Any product that can be sprayed, brushed on, dusted or daubed may be a candidate for profitable packaging in aerosol form. Write today if you would like us to work with you to turn your aerosol ideas into profitable reality.

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*Aerosol Pressure Products Survey, Chemical Specialties Manufacturers Association

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One of the major advantages of marketing or testing the potential of your product in aerosol form is that it need not involve a large initial cash outlay. Entry into this profitable field can be made economically and without investment in plant or special equipment.

This is possible because there are many highly capable "Contract Fillers" throughout the country who will put up your product in aerosol form in quantities as low as a few thousand. These Fillers offer a wealth of accumulated experience invaluable to the newcomer to aerosol marketing. For a list of Aerosol Contract Fillers, write to General Chemical.

C.S.M.A. 1956 Aerosol Awards Competition

Awards will be made in the following ten classifications:

1. **Insecticides, Repellents and Moth Proofers**
2. **Room Deodorants**
3. **Paints, Enamels, Other Protective Coatings and Paint Remover**
4. **Other Household Products — polishes, glass cleaner, rug shampoo, water repellents, etc.**
5. **Shave products**
6. **Hair preparations**
7. **Other Personal Products — shampoos, body deodorants, sun tan oil, drugs, etc.**
8. **Snow — all types**
9. **Industrial Products — lubricants, stencil inks, belt dressings, etc.**
10. **Glass and Plastic Aerosols — all products**

Entries close October 15th. All entries should be forwarded to the committee as soon after September 15th as possible. To be eligible for entry a product must be on the market and have been freely offered for sale prior to September 1, 1956. Only one entry may be made by any marketer or brand owner in any one class.

Entry Forms available from
The Aerosol Awards Committee of

Chemical Specialties Mfrs. Assn.

50 East 41st Street **New York 17, N. Y.**

New Products and Packages

Eppi Girdle Spray, deodorant talcum powder is packaged in an aerosol container by Continental Filling Co., Danville, Ill., for Eppi Products Corp., Cleveland. Crown Cork & Seal Co., Philadelphia, supply the container, and the plastic cap. Risdon Manufacturing Co., Naugatuck Conn., supply the powder valve.

Mitcham Lavendar, an aerosol cologne is distributed by Potter, and made by the Aerosol Co. of South Africa, Pty., Ltd., Durban, S.A. The bottle and cap are made by Wheaton Glass, Millville, N. J., and the valve by Risdon Manufacturing Co., Naugatuck, Conn.

Gebauer Chemical Co., Cleveland, have just announced a new aerosol spray, which is yet to be named. The product packaged in a shatter-proof glass aerosol container, delivers an accurate dosage of spray, because of its metered valve. Active ingredient in the spray is ephedrine.

Black Satin, Angelique, a new spray cologne custom filled by Armstrong Laboratories, Boston, for Angelique, Inc., Wilton, Conn., has recently been introduced on the market, together with three other Angelique fragrances, in advance of the Christmas season. The other fragrances are: White Satin, Gold Satin and Red Satin. Container and valve are made by Manufactured Products Corp., (formerly Colt Plastics). von Ameringen-Haebler, Inc., New York supply the perfume.

aerosol talcum powder
Girdle Spray
by Eppi

Potter-Moore
MAGNUM LAVENDER

BLACK SATIN
Angelique
SPRAY COLOGNE
BLACK SATIN
Angelique
SPRAY COLOGNE

Aerosols...

next stop, the pharmaceutical industry

PROMINENT on the program of the 18th Annual Forum of the Packaging Institute, held at the Hotel Statler, Cleveland, September 10-12, was an aerosol seminar built around the theme — "Aerosols . . . Next Stop, The Pharmaceutical Industry." Richard J. Hennessy of the Lederle Laboratories Division of American Cyanamid Co., New York, moderated the panel. The two principal speakers were T. D. Johnson, Jr., manager of aerosol propellant sales for the Kinetic Chemicals Division of E. I. du Pont de Nemours & Co., Wilmington, Del., and Morris J. Root, technical director of G. Barr & Co., Chicago.

Mr. Johnson discussed "Aerosols—Principles and Scope of Operation." He outlined some of the choices which the prospective aerosol packager has as to the type propellant to be used, method of fill and the basic types of aerosol systems which may be employed. He emphasized the advantages which liquefied gases offer as propellants in contrast with compressed gases, pointing out that when the liquefied gas is employed "the pressure remains approximately the same so long as there is any propellant present and the stored up energy to do work is many times that when a compressed gas is used."

Mr. Johnson described the basic types of aerosols: (1) those based on a homogeneous system wherein propellant and active ingredient are dissolved in one another; and (2) those based on a heterogeneous system wherein propellant and active ingredient are insoluble in one another or in some manner are separated from each other. He indicated how the spray pattern can be varied widely from an extremely fine particle size to a coarse size or even to a stream, by varying the percentage or composition of propellant or by changing valve design. Slides were presented to show typical systems, in one of which — a possible heterogeneous system — the propellant is separated from the product to be dispensed by a membrane or diaphragm. In such a system the propellant serves only to squeeze the material from the membrane through the valve. Mr. Johnson indicated that it would be quite possible to dispense toothpaste, salves and ointments in this manner. The method is at present still in the laboratory stage, and not yet ready for commercial use.

Mr. Johnson emphasized that for drug and pharmaceutical products the aerosol package "offers advantages of packaging in an air-free, gas-tight container. The sealed package precludes contamination of active ingredient during consumer use; spillage is eliminated; one-hand operation in dispensing is normal; rapid application of medicament is possible."

Tom Johnson of Du Pont's Kinetic Division reviews some of the basic principles for the prospective aerosol marketer theme of aerosol seminar at 18th annual forum of the Packaging Institute in Cleveland, Sept. 11.

"All of the fluorinated hydrocarbons used in the aerosol industry," the speaker noted, 'are of a very low order of toxicity.' Inhalation tests by Underwriters Laboratories place them in Group 5 or 6, Group 6 containing only compounds of extremely low toxicity. To give you a benchmark, CO_2 falls in Group 5, while CC_{14} falls in Group 3. This low order of toxicity does not necessarily carry over to an aerosol product, as the entire formulation must be considered. Caution should be exercised, in that the physiological activity of drugs may be dependent upon the particle size in which they are dispensed.

"The fluorinated hydrocarbons commonly used in the aerosol industry are nonflammable and nonexplosive in any mixture with air. Once again, however, it is the complete formulation which must be examined from this standpoint. Most cosolvents used are flammable; i.e. ethyl alcohol. If a nonflammable product is desired, the amount of flammable cosolvent must be limited to about 30% of the total formulation.

"Another reason for the wide use of fluorinated hydrocarbons is their stability. These compounds are relatively unreactive in solvent systems.

In aqueous systems it is necessary to use compounds which are resistant to hydrolysis such as dichlorodifluoromethane and dichlorotetrafluoroethane. Enough is known of the behavior of typical aerosol systems to enable selection of the most likely propellants.

"Because of the stability of the fluorinated hydrocarbons, few problems are encountered in aerosol products that are not encountered in their conventional counterpart. It is advisable, however, to check any formulation for stability and effect on packaging materials. Both room temperature and elevated temperature tests should be conducted, as experience shows that neither is reliable by itself. It is usually the ingredients other than the fluorinated hydrocarbon that must be evaluated closely."

DISCUSSING "Pharmaceutical Aerosols—From Idea to Product," Morris J. Root of G. Barr & Company, Chicago, stated that it is sound to consider an aerosol formulation of any specific pharmaceutical product if any of the following factors are of importance:

(1) ease of application
(2) prevention of contamination of product
(3) elimination of air in the product
(4) uniform application to skin
(5) formation of a fine mist for inhalation therapy
(6) speed of application
(7) application without manual contact

A successful pharmaceutical aerosol product, he suggested, should be "formulated specifically for aerosol dispensing rather than adapted to it. Formulation changes are nearly always necessary," he added, "when going from conventional packaging to aerosol packaging." There are four possible formulation systems for aerosol pharmaceuticals: the three-phase system; the two phase system; the emulsion system; and the dispersion system.

There are some practical drawbacks to the three-phase system, Mr. Root observed. Depending into which layer of liquid the dip-tube extends, the user can get either propellant alone or product. The two-phase system is used for by far the largest number of aerosol products presently on the market; however since water is not miscible with the propellants used, the two-phase system is impractical for any product containing more than a small amount of water.

The emulsion system, the speaker indicated, may open up many new possibilities for aerosol pharmaceuticals. Recent developments whereby the propellant is emulsified into an aqueous system by the use of anionic and non-ionic detergents permit, for the first time, the dispensing of aqueous products as a spray. Although such systems require only from two to five percent of propellant, it is necessary to use at least one and a half to two times that amount of emulsifier. These emulsions can be almost transparent in appearance. It now becomes possible to make water-based sprays by emulsifying the propellant with one or more surfactants. These water-based sprays are being widely studied for aerosol pharmaceutical applications.

The fourth system, the dispersion system, is employed where the active material is insoluble in the propellant. It is dispersed instead, and a powder spray aerosol is the result, commonly employed for example in the application of powders to feet or hands.

Discussing the amount and type of propellant to be used for differing types of aerosol packages, Mr. Root offered the following table of pressures suitable for the various types of aerosol containers:

Maximum P.S.I.G. 70°F.		*I.C.C. Regulations*
90	2 P Crown Can soaps and foodstuffs only	73.302 (a) (5)
70	2 P Crown Can (with safety valve) propellants only Non-flammable, non-poisonous insecticides	73.306 (c) (1) Special Permit 1195
60	2 P Crown Can flammable, non-poisonous products	73.306 (d) (2)
40	Metal containers blackplate, tinplate and aluminum	73.302 (a) (3)
25	Plastic coated glass	Manufacturers' Recommendations
15	Uncoated Glass	Manufacturers' Recommendations

Morris Root of G. Barr & Co. carries the prospective marketer of a pharmaceutical aerosol from idea to finished product.

Decisions on the type container to be used for an aerosol product, the speaker suggested, hinge on four important factors: (a) material of construction (b) size (c) cost of container and (d) aesthetics. He offered the following chart giving the cost in cents per avoirdupois ounce fill of the various containers:

METAL CONTAINERS	*Cents/Oz. Av.*
Tin Plate	
16 oz.	.0030
14 oz.	.0035
12 oz.	.0036
6 oz.	.0053
4 oz.	.0071
Aluminum	
2 oz.	.0350
BOTTLES, PLASTIC COATED	
4 oz.	.0245
2 oz.	.0360
10 cc.	.1800
PLASTIC CONTAINERS	
2 oz. Nylon	.0350
2 oz. Melamine Formaldehyde	.0600
2 oz. Phenol Formaldehyde	.0300

He cautioned that materials of construction of the valve components must be checked with the particular formulation to be packaged, bearing in mind that elastomers may swell,

plastics may shrink and the metal parts may corrode.

Discussing laboratory testing, Mr. Root cautioned prospective marketers of aerosol pharmaceuticals that assays on the active ingredients must be made over a period of time to determine their shelf life in the aerosol package, a lesson which early packagers of other types of aerosol products have in some cases learned only from expensive and embarrassing experience. Because the environment is different in an aerosol package, he reminded, previous testing of active ingredients in conventional packaging is not always reliable.

Turning to shelf life testing of the completed aerosol package, he reported that newly developed methods of checking tin plate corrosion now make it possible to come to a definite conclusion as to the suitability of a particular container in as little as four weeks time. Accelerated shelf life studies should be conducted, he recommended, by placing test containers, both upright and on their sides, in an oven at a temperature of 100°F. He warned against using temperatures higher than 100°F as being unrealistic and possibly leading to erroneous conclusions.

Shelf life testing of powder aerosol products, Mr. Root noted, is especially critical. "The containers must be activated periodically during the test. A valve used on a powder product may indicate little or no seepage immediately after crimping, but after activation may show excessive seepage and subsequent clogging. The clogging problem must be checked very thoroughly. Although in one hundred containers none may be found to be defective, when a thousand containers are checked, two or even more might be found to be defective, which is too great a tolerable percentage."

Consumer and market testing, and later pilot plant operation, represent important steps which should be taken before going into full production, the speaker suggested. It has been demonstrated that consumers are perfectly willing to pay for the convenience and functionality of aerosol packaging, but since an aerosol package is inherently more expensive than a conventional package, the consumer must find some definite advantage in the aerosol.

Mr. Root concluded his discussion with the suggestion that if the services of a contract filler are to be utilized in producing an aerosol package, it is advisable to contact him early in the planning. Thus much time can be saved by avoiding the mistakes which others have made, and by taking advantage of the know-how that the contract fillers have accumulated.

In another section of the program A. R. Marks of Wheaton Plastics Co., in a talk under the title "Techniques and Methods for Use of Plastic Coated Containers" told the story of the development of such containers and made some very interesting predictions on future trends in the aerosol market and the anticipated rapid expansion of aerosols in pharmaceuticals and foods.

"In certain quarters of the fragrance industry," he reported, "it is considered that aerosols will soon be the only recognized method of packaging colognes and perfumes." He pointed to the very apparent advantages offered by aerosols for colognes and perfumes,—no evaporation, no oxidation, no contamination and no degeneration of fragrance because of the completely sealed package.

As for anticipated expansion in the pharmaceutical field, he observed that "aerosol units aseptically packed will remain aseptic throughout the life of the package. Moisture-sensitive materials will not deteriorate. It is possible to formulate without preservatives and antioxidants. The package is tamper proof." The aerosol method allows the effective deposition of medicaments without use of inert carriers and diluents which may interfere with the physiological action of the active components, and also makes application of medication to sensitive areas easier since there is no physical contact involved in the application.

He suggested that while the cosmetic industry has been the leading user of plastic coated glass containers up to this time, "indications are now that producers of pharmaceuticals and food products will soon account for the major proportion of glass aerosols."

At present about eight pharmaceutical products are being packed as aerosols, Mr. Marks advised, and he estimated that forty more products are in the experimental stage, either laboratory or clinical, many of which are scheduled for early appearance on the market. "As veterinary pharmaceuticals," he suggested, "aerosols can be very useful in treatment of eyes, nasal and oral cavities, the medication being applied so quickly that the animal is not aware of what is happening until it has happened."

Turning to the food market, Mr. Marks observed that the somewhat higher cost of aerosol packages has been overemphasized as a factor limiting their use. Consumers seem more than willing to pay the higher costs involved in aerosol packaging, he believes. "With recent developments in aseptic canning and pressure packaging, it should soon be possible to package semi-solid foods such as spreads, condiments and sauces in non-refrigerated aerosols."

Mr. Marks reviewed the history of the development of the plastic coated glass aerosol containers which Wheaton manufactures, and gave details on some recent developments which make it possible to supply containers which will protect contained products from ultraviolet radiation. Wheaton can now supply either a completely opaque plastic coating or a special new coating which contains an added ultraviolet absorber. This new coating allows a high degree of product visibility, together with a sharper ultraviolet cutoff than that provided by an amber glass container.

The function of a radiation screen, Mr. Marks noted, is to cut off all ultraviolet and visible violet wave lengths

(*Turn To Page* 43)

why did *Toeed*

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Twenty-five years of packaging and engineering experience and pioneer knowledge of aerosol filling have brought about techniques in quality control which are above and beyond what is usually expected.

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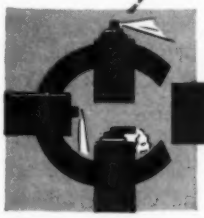

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Pressurized Garden Sprays

by *John F. Odeneal*
Fairfield Chemical Division
Food Machinery & Chemical Corp.

A PRESSURIZED garden plant spray won't work . . . too small a container for garden use . . . dusts or emulsifiable sprays are the only practical method . . . much too high in cost to make a practical product . . . too windy outdoors to use a pressurized spray . . . no insect problem indoors . . . the public won't spend $1.50 for a twelve ounce spray when they can buy a pound of dust for $0.79 . . . such a unit won't kill insects, it won't control infestations . . . it can't be done.

And so, with these enthusiastic demonstrations of confidence, work on the pressurized garden plant spray was started in 1950. No organized program was set in motion, but intermittent experiments were carried on for almost two years.

The first experimental bombs killed plants within 24 hours. Kerosene-type oil coated the leaves and prevented the plant from breathing — in a short period of time the plant was dead. A search was made for an oil safe to use on plants but, although many were tried, none were satisfactory. After scores of formulas were tested, each succeeding trial began to produce more encouraging results. Careful preparation, new solvents and the gradual elimination of kerosene-type oil led to safer and safer sprays; finally, a unit was produced that contained only one part of oil in 1000 parts of spray.

Once this was accomplished, it was felt that a safe, usable garden spray was practical; however, this by no means meant that the product could be rushed on the market and sold like a new shoe polish or hair lacquer. The U. S. Department of Agriculture keeps careful check on all insecticides, and the enthusiasm of successful experimenters carries very little weight. The USDA says, "Prove it," and such proof is not readily obtained. Tests must be carried out by qualified experts under carefully controlled conditions before any claims are allowed.

Once the experimenters were convinced that a garden pressurized spray was practical, the job of testing was turned over to the New Jersey College of Agriculture and to the Long Island Agriculture and Technical Institute. Experimental work has been conducted on every plant and against every insect listed on the label of any manufacturer's push-button garden spray, and it has been proved by these or similar institutions that these pressurized sprays are safe and effective. At one time, when there was doubt as to the effectiveness of these bombs against Japanese beetles, 400 were sprayed and 24 hours later dissected to prove that they were dead. Result — 398 of the 400 were killed by the spray.

After the tests were run, results were submitted to the USDA and recommendations and instructions were set up so that manufacturers could prepare their labels. The home gardener probably does not realize how carefully these labels are prepared, but a great deal of effort goes into their preparation for his protection. Every pesticide label should be read carefully, since it explains fully the correct operation of the unit and contains valuable information on how to use the ingredients economically. Very little spray is needed to control garden insects, and

one of the most common faults is overspraying. This is not only uneconomical, but also may cause plant injury just as will overspraying with any other type of product.

The handy pressurized garden sprays are rapidly becoming the good right hand of the home gardener, both large and small. They are suitable for use on such ornamentals as roses, azaleas, asters, begonias, mums, zinnias, African violets and many other plants, and can also be used in the vegetable garden on tomatoes, cucumbers, corn, peppers, etc. No garden insects are immune to these sprays and they pack such a high concentration of active ingredients compared to most water-based garden sprays that such insects as Japanese beetles, thrips, aphids, mealy bugs, red spiders, lace bugs and other common garden insects readily succumb.

Unlike the householders who years ago discovered the advantages of a push-button fly spray, the home gardener has had to continue to put up with accessory equipment, mixing, stirring, filling and pumping until it was questionable if the complications of insect control outweighed the insect damage. For householders with 4 or 5 rose bushes or a small patch of garden, the equipment and labor seldom seemed worth the results achieved — and they simply hoped that summer would end before the insects got too far.

Gardeners, large and small alike, have had to suffer through an unpleasant preliminary preparation just to kill one bug. Now the pressurized garden spray is always at hand. Aim the unit and push the button. Large gardens can be spot treated — and, by keeping incipient infestations under control, the dreaded day of old clothes and messy, smelly, pump gun spraying can be put off an extra week or so. Small gardens can be handled with push-button sprays alone, and here a new market was tapped. It was found that many small gardeners had never bothered with spraying, finding the necessary mixing and equipment too much trouble for their indoor plants and small outside plots. Previous sales estimates and market surveys had ignored the small gardeners, but the pressurized garden spray has ferreted them out. For the same reason that more people own Fords than Cadillacs, these small gardeners represented a large, previously unknown garden market, which can now be sold for the first time with a product ideally suited to their requirements.

Another — and very unscientific — aspect of the pressurized garden spray is that it satisfies a need long felt by home gardeners plagued by insects; namely, to see something happen when they spray. The gardener hates insects — he wants to exterminate them — make them suffer for ruining his plants. It is apparently extremely satisfying to the home gardener to stalk insect pests, line them up in his sights and then see them knocked twisting and squirming by a lethal burst of spray. (Sometimes this enthusiasm leads to dangerous overspraying, but the stalking gardener is hard to stop.)

The procedure, up until now, of course, has been to buy whatever product looked like it might work, go through the unpleasant task of preparation and then, following instructions, spray the garden. Nothing visible happened and the gardener's sole consolation was that the next day most of the insects were gone and things seemed to be in better shape. By contrast, the pressurized garden spray is a great source of satisfaction to the home gardener, for his efforts are successful the moment he sprays and not 24 hours later.

Most of the present plant sprays are made with combinations of pyrethrins, piperonyl butoxide, piperonyl cyclonene and rotenone. These ingredients are particularly suitable for this purpose since they provide fast knockdown and kill, are safe for use around the home and on garden vegetables, and continue to kill those insects which have developed resistance to the more common chlorinated compounds. For the last few years, home gardeners have been using phosphates and chlorinated hydrocarbons since they are extensively used by commercial growers; however, in the case of pressurized sprays, it has been found that pyrethrins, piperonyl butoxide, piperonyl cyclonene and rotenone will give superior performance. Tests have been made in various parts of the country and the pressurized spray kills insects faster and more effectively than almost any dust or emulsifiable spray. This is not surprising when one considers the actual concentration of active ingredient applied to the plant when using a pressurized spray as compared to the low concentrations of commercial agricultural sprays.

Customer acceptance, in spite of the opinion of the experts, has been very high, and although garden bombs have not been extensively advertised, each year shows a steadily increasing demand for this type product. The home gardener has found a more convenient method of doing a job and has accepted the garden spray as a valuable tool in his fight against insects.

As in any new field, the development of a simple pressurized insecticide for insect control is by no means the final solution. Almost as soon as the first bombs hit the market, manufacturers were considering improvements and additions. A number of these have already been marketed and others are in an experimental stage. From this one type product, any number of new approaches are beginning to develop. Many of them seem to have great promise, and it is possible to look forward to wide variation on the basic formulas within the next year or two. Some units now contain fungicides as well as insecticides. The first formula of this nature was designed to control black spot on roses. This year, bombs are on the market with combinations of fungicides designed to control not only black spot but also powdery mildew and a wide spectrum of additional plant diseases.

Another variation of the pressurized garden product is one in which the active ingredients have been greatly increased, thereby allowing the unit to act not only as a plant

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Aerosols in

SWEDEN is a country of 173,500 sq. miles — slightly larger than California — with a population of seven million people — somewhat less than that of Texas. Most people think of Sweden perhaps in terms of the many notable individuals she has contributed to the world's scene: August Strindberg, Emanuel Swedenborg, Jakob Berzelius, Count Folke Bernadotte, not to mention Greta Garbo, Ingrid Bergman and last, but in the eyes of the American public certainly not least, Anita Ekberg. This Scandinavian Republic, however, enjoys and has enjoyed for many decades, one of the highest standards of living in Europe, largely because of the highly efficient exploitation of its national resources—and the development of its dairy industry.

Sweden also has a small (by American standards) but nevertheless flourishing and progressive aerosol industry well worth consideration by Americans interested in expanding abroad. Aerosol packages made their first appearance on the Swedish market in 1946. Two different types of units, both containing insecticide, were introduced. The first was a one-time only package which apparently had been procured from surplus military stocks in the United States, while the second was the conventional high pressure type unit which appeared on the American market at approximately the same time. Inasmuch as the latter unit sold in Sweden for the equivalent of approximately $5.00 at the time it was introduced, the market was very limited. It was consequently impossible at the time to form any preliminary opinion as to acceptance of this form of pressurized package by the Swedish consuming public.

Some years later, British-made aerosol insecticides were marketed in Sweden, but here again, the high price precluded any assessment of what the potential sales for this type of packaging might be. It was not until the end of 1954 when the first Swedish aerosol contract filler (Skandinaviska Aerosol AB., Drottninggatan 29A, Stockholm C) commenced loading operations, that the aerosol concept came to be recognized as a potentially important packaging medium.

Although the costs of producing aerosols have been considerably reduced because of the establishment of local filling facilities, there is still considerable consumer resistance to paying the added premium for the convenience of "push button" packaging. For example, an aerosol moth proofing spray costs Sw. Kr. 5.50, while a non-pressurized package containing approximately the same amount of material costs only Sw. Kr. 2.00. On the other hand, there exists in Sweden, as elsewhere, a great deal of "gadget appeal", and it appears that a not inconsiderable segment of the public is willing to pay the higher price for a pressurized product, not so much because of the added convenience, but because a certain fascination exists in being able to push a button and see a spray expelled.

As elsewhere abroad, many Swedish customers ask whether or not the aerosol package they purchase is refillable. It apparently seems to many purchasers that with the substantial premium being paid, some mechanism should be available whereby aerosol units could be used over and over again. Despite this obvious public demand, however, packages utilizing the re-usable valve developed in Italy (see *"Aerosol Age"*, August 1956, page 10) have apparently not had any success in the Swedish market.

An incidental additional draw-back in Sweden seems to be the lack of any suitable translation of the word "aerosol" itself. To date, most retailers and customers have managed to use the English expression "aerosol" or "spray", but since both words are essentially foreign to the Swedish language, they are not always quite comfortable to use. Another example of semantic difficulties is illustrated

Sweden

by one Swedish insecticide package which bears the caption "med knock-out effekt"!

Insecticides, hair lacquers and, against expectations, room deodorants have been the largest volume items marketed in aerosol form in Sweden to date. There are, however, quite a variety of other types of aerosol products which apparently have been successfully introduced on the Swedish market. Among them fire extinguishers, hair lacquers, hand creams, sun tan sprays (in cans and bottles), colognes (in bottles) and plastic dressings.

Shaving cream packages are for the time being all imported from the United States, and the consensus is that direct importation will continue until sufficient volume has been developed to warrant local filling.

The principal shaving cream packages sold in Sweden are: Rapid Shave (Colgate-Palmolive) and Instant Lather (Williams). Bridgeport Brass Co. is also marketing some of their aerosol products through a local sales agent they have appointed in Sweden, but so far it does not appear that any large volume (relative to locally produced aerosols) has been developed—largely because of the higher price on complete imported packages.

By Andrew H. Wolff
Pegasus International Corp.

Box (fire extinguisher), loaded by Klarre & Co., A. B.; Helene Curtis Lanolin Discovery (Precision valve), imported and released by Svenska Frisordepoten A. B.; NR 12, cologne, loaded by Skandinaviska; Maldom, mothproofer (Precision Valve); Razzia, insecticide, (Precision valve); Shantung, cologne, Zonite system, loaded by Skandinaviska Aerosol A. B.; Box, insecticide (Precision valve); Sun Spray, Spray Tan (Precision valve) sun tan oils; Nobecutan, wound dressing (Precision valve); Paradimal Klam-At, insecticide (Precision valve); Blas-ut, fire extinguisher (0.1 & Equipment valve); Trix, mothproofer, (Precision valve); U. S. Bomben, insecticide (Precision valve); Lenigen, hand cream (Precision valve); Renaissance, cologne, loaded by Skandinaviska; Strax Renare Luft, room deodorant (Risdon valve); Vigette, hand cream, and Flugskrack, insecticide (Seaquist valve).

Retail prices for aerosol products may be generalized as follows:

Insecticides (12 ozs.)	Kr. 10 to 12
Moth-proofers (6 ozs.)	5.50
Hair lacquers (6 ozs.)	8.50
	(including luxury tax)
Room deodorants (6 ozs.)	6.00
Shaving lathers (6 ozs.)	5.00

Sw. Kr. 1.00 equals 19.30 U.S. cents.

Propellants are freely available in Sweden either from American manufacturers or from several suppliers in Europe. Prices in ten ton lots in ton cylinders (for American, German or British propellants are):

	per kilo
Propellant 11	Sw.Kr.3.87
Propellant 12	Sw.Kr.4.15
Propellant 11/12 (50:50)	Sw.Kr.3.78
Propellant 11/12 (40:60)	Sw.Kr.3.80
Propellant 11/12 (70:30)	Sw.Kr.3.72
Propellant 114	Sw.Kr.9.15
Propellant 12/114(40:60)	Sw.Kr.7.15

All prices indicated above are C.I.F. Swedish factory and include return freight of the empty cylinders to place of origin. Interestingly enough, Propellant 11 with a boiling point above 0° C. is not considered as a compressed gas like the other types of propellants, including the mixtures. Therefore, when Propellant 11 is imported in its pure state, it is liable to a customs duty of 15% ad valorem of the C.I.F. Swedish port price. All other propellants are admitted duty free. For comparison purposes, Sw. Kr. 1.00 per kilo equals 8.75 cents per pound.

Sweden, pursuing a liberalized trade policy, has few restrictions on the purchase of cans, valves and bottles from the United States or from any other European source. It has been reported that AB. Platmanufaktur will be supplying from local production late this fall a 12-ounce beer can type aerosol container, and that Surte Glasbruk will be marketing an uncoated glass bottle at approximately the same time. Manufacture of propellant gases by a large Swedish chemical company has been under consideration for

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NEWS of Pressure Packaging

ICC Issues Shipping Rules

The Interstate Commerce Commission recently issued its Docket No. 3666, "In the Matter of Regulations for Transportation of Explosives and Other Dangerous Articles," which covers and clarifies previous regulations for the transportation of aerosols. The docket also includes proposed amendments and changes to the stated regulations, both of which are listed in appendices.

The docket is of considerable interest to manufacturers and shippers of aerosols in that it includes specific regulations on the shipment of propellants and charged containers by individual unit and by tank car. The regulations describe the various lot testing methods to be used to determine the desired safety margins. Included are heat, hydrostatic, burst, flattening, and other tests of the container's abilities to withstand various unfavorable conditions.

•

To Prepare Vendor List

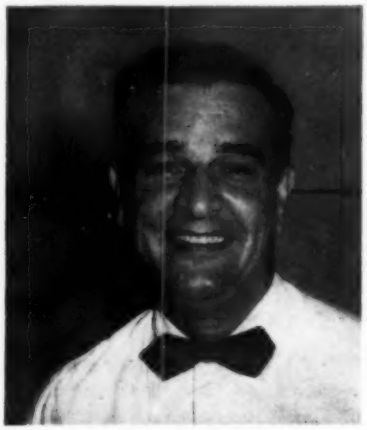
The CSMA announced last month that it is preparing the 1957 "Vendors to the Trade" (Second Edition) for publication early next year. The booklet, listing members who are in a position to sell their products or services to the trade, will include two separate sections. One will contain an alphabetical listing of products and services offered, and a second will contain a further description of products and services.

•

Avon Appoints Beacher

Avon Products, Inc., Suffern, N. Y., recently appointed John Beacher to its Suffern manufacturing laboratory. Mr. Beacher joins the cosmetic manufacturing concern as an expert in aerosol techniques.

Most recently, Mr. Beacher worked on aerosol research and development at General Chemical Division, Edgewater, N. J. He has been with General since 1948, leaving that company in August to join Avon.



John Beacher

Prior to his service at General, Mr. Beacher worked with the Delaware Agricultural Station in its research and insecticide departments. Before that he served in the U. S. Army with a Malaria Survey Unit in the China-Burma-India area.

Mr. Beacher, a resident of Oradell, N. J., received a B.S. degree from Pennsylvania State University in 1939, and his M.S. in 1941 at Ohio State University.

•

Canners Assn. To Convene

The 50th anniversary convention of the National Canners Association was announced last month for Feb. 16-19 at the Conrad Hilton Hotel in Chicago. The National Food Brokers Association will also hold its annual convention during the same period, and the Canning Machinery and Supplies Association has announced its annual exhibit Feb. 16-20. Research, agriculture, marketing, and sales will be discussed at four public general sessions.

Aerosol Pub. Committee Meets

The Aerosol Publicity Committee of the Chemical Specialties Manufacturers Association, headed by Fred Lodes of Precision Valve Corp., Yonkers, N. Y., met at the association office, September 12th, to consider plans for future aerosol publicity. The committee agreed in principle on the outlines of a program of expanded publicity for aerosols which it was scheduled to present to the board of governors of C.S.M.A. at their meeting at Osterville, Mass., Sept. 24-26, for consideration and such action as the board may decide to take.

•

Men Using More Cosmetics

American men use more perfumed products today than women, a perfumer reported to the American Chemical Society September 20th. Dr. Oliver L. Marton, chief perfumer and for many years chief chemist of Shulton, Inc., Clifton, N. J., a manufacturer of cosmetics and toiletries for men, reported this fact in an address before the Division of Chemical Marketing and Economics at the 130th national meeting of the ACS at Atlantic City, N. J.

Men are spending more than a quarter of a billion dollars yearly on shaving products . . . almost all of them perfumed with "masculine fragrances" . . . and that's almost as much as women spend on the "entire cosmetic market, which includes creams, make-up bases, lipsticks, rouge, mascara, and even compacts," the Society was told. Dr. Marton said that men's purchases of fragrance-containing preparations total three times as much as women spend on perfumes, toilet water, colognes, bubble baths, and similar items.

Among the factors that have produced a "spectacular upswing" in the sale of perfumed products to men, Dr. Marton asserted, are "introduc-

tion of good grooming habits by the Army during the war," and "fading out of resistance formerly displayed by men to smelling perfume scents on themselves."

•

Wheaton Licenses Hazel-Atlas

The Hazel Atlas Glass Co., Wheeling, W. Va., recently merged with the Continental Can Co., New York, and will be known as the Hazel Atlas Glass Division of the Continental Can Co.

Hazel Atlas has just been licensed by the Wheaton Plastics Co., Mays Landing, N. J., to apply plastic coatings to glass aerosol containers, using the Wheaton process. Wheaton is building a machine for Hazel Atlas for the plastic coating operation.

Hazel Atlas hopes to be in production with the process by the first of the year.

•

Aerosol Spray Method

The Chemical Specialties Manufacturers Association, Inc., recently issued a booklet, reprinted from the procedings of its 42nd annual meeting which describes a satisfactory means of determining the relative efficiency of aerosol formulations when applied as direct sprays to cockroaches." Entitled *Tentative Cockroach Aerosol Method*, the report was adopted by the Scientific Committee, Insecticide Division of the CSMA.

The booklet describes the setting up of testing apparatus, rearing of test insects, and the various test procedures used to determine the effectiveness of aerosol insecticides. The report does not offer a method for measure of residual activity.

•

1958 Pkg. Expo. at Atl. City

Over 8000 industry packaging specialists attended the Cleveland Packaging Machinery & Materials Exposition sponsored by the Packaging Machinery Manufacturers Institute. See pages 26-28 for a review of the discussion on aerosols. The next Exposition has been scheduled for Atlantic City, New Jersey, March 24 through 27, 1958.

Leonard S. Baer, new eastern sales manager for S. Barr & Co.

"Thanite" for Aerosols

In a new folder on its insect toxicant "Thanite," the Agricultural Chemicals Division, Naval Stores Dept., of Hercules Powder Co., Wilmington, describes uses of the toxicant in various aerosol fog generators and other mist machines for mosquito control. According to the folder, thanite's low oral toxicity, heat stability, cost, masking odor, and relatively low irritation make it well suited for aerosol dispersion.

In a previous Hercules publication, "Thanite, an Insect Toxicant," the company gives detailed information about thanite in aerosol cans. Tests conducted in a Peet-Grady test chamber revealed a high knockdown rate achieved with thanite in combinations with other insecticides. The publication, still available at the company's Wilmington office, reports that the insecticides tested functioned well in comparison with the Official Test Aerosol.

•

Glass Prices Raised

Owens-Illinois Glass Co., Toledo, announced last month that it will increase the prices on nearly all of its products. Company spokesmen blamed the rise on high labor costs, plus a general rise in manufacturing and transportation costs.

New Button Developed

The Precision Valve Corp., Yonkers, N. Y., has announced the development of a mechanical break-up button. It is said to be adaptable for three-phase systems and also products that have high active and low gas ratios.

•

Cont. Can Meeting Set

Shareholders of Continental Can Co., New York, will vote Oct. 26 at a special meeting in New York City, on the proposed merger agreement between Continental and Robert Gair Co.

•

Druk Pak Issues New Data

Druk Pak Inc., Zurich, Switzerland, last month issued several data sheets on some of its newly-developed aerosol equipment, including two filling apparatuses. Among the new equipment are Filling Apparatus DP-101 and Pressure Filling Machine DP-110, both described as suitable principally for experimental work and small commercial runs, and the Valve Clincher DP-104, which clinches all valves with the standard one-inch mounting cup on containers with standard openings.

The new data sheets also describe various aerosol accessories, including vacuum pumps, cylinder stands, and a laboratory pressure measuring apparatus.

•

Pennsalt Propellant Plant

Pennsylvania Salt Manufacturing Co. anticipates that production of "Isotron" propellants will start early in December at its new plant at Calvert City, Ky., now under construction.

— Convention Calendar —

CSMA, Board of Directors Meeting, and Meeting of the Aerosol Administrative Committee, *Oyster Harbors Club, Osterville, Mass.* ..... Sept. 24-26

Packaging Machinery Mfrs. Institute, annual meeting, *Skytop, Pa.* ..... Oct. 5-8

National Chemical Exposition, *Public Auditorium, Cleveland, Ohio* ..... Nov. 27-30

Chemical Specialties Manufacturers Association, *Mayflower Hotel, Washington, D. C.* ..... Dec. 3-5

American Pharmaceutical Mfrs. Assn., Mid-Year and Eastern Section Meetings, *Waldorf-Astoria, New York* ..... Dec. 10-12

National Canners Association, 50th Anniversary Convention, *Conrad Hilton Hotel, Chicago, Ill.* ..... Feb. 16-19, 1957

Canning Machinery and Supplies Association, annual exhibit, *Conrad Hilton Hotel, Chicago, Ill.* ..... Feb. 16-20, 1957

National Packaging Exposition, International Amphitheatre, Chicago April 8-11, 1957

Chemical Specialties Manufacturers Association, *Drake Hotel, Chicago, Ill.* ..... May 20-22, 1957

CSMA '57 Convention

The Chemical Specialties Manufacturers Association, New York, last month announced several committees and events for its 44th annual meeting at the Hollywood Beach Hotel, Hollywood, Fla., in December 1957. The committees so far named include those on transportation, preconvention and post convention, general entertainment, open house night planning, golf, sports, and ladies program. Committees are expected to have tentative reports ready for the 43rd annual meeting in December of this year.

•

"Pyrenone" Tolerances Set

A wide variety of fresh fruits that are to be processed, frozen, or canned were recently given official tolerances by the Food and Drug Administration. The tolerances were set at eight parts piperonyl butoxide plus one part pyrethrins (or, from different treatments, four parts allethrin) per million parts of fruit.

The same tolerance level was also given official sanction for storages of peanuts, peas, grain, sorghum, cocoa beans, copra, and a variety of nuts; but does not change the previously-announced higher level of 20 parts piperonyl butoxide and three parts pyrethrins for stored wheat, corn, rice, rye, barley, and buckwheat. "Pyrenone" is the registered trademark for piperonyl butoxide and pyrethrins for the products of the Fairfield Chemical Division of the Food Machinery and Chemical Corp., Baltimore.

•

Cont. Can Research Center

The Continental Can Co., New York, last month issued a descriptive illustrated booklet on its new research and development center in Chicago. The concrete and brick structure, containing more than 260,000 square feet of floor space, is located in the industrial area of Chicago and employs more than 600. It consists of several laboratories for aerosol research, including research study in container design, evaluation and specification, plate and protective coatings, and can-making plot lines.

A recent Swedish advertisement for "Shantung" cologne. Apart from the excellent design and presentation, the special emphasis placed upon method of valve operation is worthy of note. (See article on pages 32 and 33 of this issue on the Swedish aerosol market.)

New Law to Affect Aerosols

The CSMA recently reported to its members that a bill will be introduced in the Connecticut Legislature early next year which will be of considerable interest to aerosol manufacturers. Covering products during sale and use, and sponsored by the Manufacturers Association of Connecticut, Inc., the bill is tentatively titled "An Act Concerning the Labeling of Hazardous Substances."

The CSMA points out that chief interest of aerosol manufacturers will probably be in the flammability classification, which according to the wording of the proposed bill shall be "determined by the flash point from the Tagliabue Open Cup Tester as used for the testing of burning oils, at or below a temperature of 80°F." Authority to enforce the act is to be vested in the Connecticut Commissioner of Food and Drugs, and its provisions are slated to take effect July 1, 1958.

New Calif. Freon Plant

The new multi-million dollar plant for manufacture of "Freon" aerosol propellants and refrigerants is scheduled to go into production about October 1, the Du Pont Co. announced at its headquarters in Wilmington, Del., last month. Construction of the plant at Antioch, Calif. was begun last year.

Initial production for the company's Kinetic Chemicals Division will be trichloromonofluoromethane (Freon-11) and dichlorodifluoromethane (Freon-12), with the plant serving as distribution point for all such Freon propellants in the area west of the Rockies.

•

Purchase Details Announced

B. T. Babbitt, Inc., New York, last month announced details on its purchase of the Connecticut Chemical Research Corp., a major aerosol producer. The acquisition was effected through an exchange of 30,000 proposed series A 5% cumulative convertible $50 par shares of preferred stock and 10,000 shares of proposed series B 3% $50 par preferred of Babbitt for all outstanding shares of Connecticut Chemical. At the time of the exchange, the Connecticut firm had 460,000 shares of common and 22,926 shares of preferred outstanding.

The Babbitt announcement specifies that the purchasing company will continue to market the products of Bostwick Laboratories, a former subsidiary of Connecticut Chemical. The combined sales of Babbitt's recently acquired companies is expected to bring Babbitt's sales volume to an annual figure of $27 million, plus the fact that it will launch the company in the aerosol business.

•

To Market New Antiseptic

"Burn Aerospray," a mist designed to soothe and heal burns, sunburn, cuts and scrapes, has been placed on the market by Kip, Inc., Los Angeles. The new product is actually the company's "Antiseptic First-Aid Oil" in a new pressurized package. The company is supporting the aerosol's advent on the market with a high-frequency advertising campaign.

Postpone Sept. 13 Meet

The CSMA announced last month that it was postponing the meeting, originally announced for Sept. 13, which was scheduled to review the proposed changes in regulations of the Interstate Commerce Commission concerning the safe shipment of aerosol products. (A complete text of the change appeared in page 51 of September *Aerosol Age.*) The association reports that, in general, members are favorable to the proposed change, and the meeting is postponed until early October to give members more time to submit their comments. It is reported that it was common opinion that the word "nonrefillable " should be inserted in the changes.

At the same time the CSMA issued a text of the revised regulations of ICC. The CSMA bulletin also listed the specifications for "Flammable Liquids, Definition and Preparations."

•

Canco Trailer Deliveries

A can delivery method using a trailer as the delivery package, has been announced by American Can Co., New York.

A fleet of eight specially engineered trailers, each holding some 130,000 jumbled six-ounce cans, is in service between Canco's Plymouth, Fla. plant and Minute Maid plants at Plymouth and Leesburg.

"This new can handling system reduces labor and boosts output," according to Canco's packaging supervisor. "It increases efficiency of filling operations because of the continuity of can supply."

•

New Polyethylene Tubing

Hydrawlik Co., Roselle, N. J., recently placed on the market a new type of polyethylene tubing, which the company reports is particularly suited for use in aerosol dip tubes. The new tubing is traversed in neat spools of 1, 2, and 3000 feet, is flexible, and allows close tolerances.

The new tubing, called "Hydralene No. 35," reportedly will not split or crack even with tight friction fits, and is available in coils or cut pieces, in either clear or color.

New Babbit Board Members

Mortimer Fleishhacker, Jr. of San Francisco and A. O. Samuels of Bridgeport, Connecticut have been elected to the Board of B. T. Babbitt, Inc., of New York.

The two new directors are both chief executives of newly acquired divisions of B. T. Babbitt. Mr. Fleishhacker, a Pacific Coast business leader, was president of Chemicals Incorporated which was recently added to the Babbitt organization. Mr. Samuels, a pioneer in the aerosol industry, was founder and president of the Connecticut Chemical Research Corp. which has just been incorporated into the B. T. Babbitt organization.

•

Cont Can Wins Merger Case

Federal Judge Sidney Sugarman refused last month to grant a government motion for a temporary restraining order blocking the proposed merger of the Continental Can Co., Inc., New York, and the Hazel-Atlas Glass Co., Wheeling, W. Va. He ruled that the government had not shown that it would suffer immediate and irreparable injury if the restraining order was not granted.

On Sept. 10 the Dept. of Justice's anti-trust division had filed suit in the N. Y. Federal Court to enjoin Cont Can from acquiring Hazel-Atlas, contending that the merger would tend to create a monopoly in violation of the anti-merger provisions of the Clayton Act. Judge Sugarman suggested that if this were the case, the government might move for relief by divestiture. Hazel-Atlas is described as the second biggest producer in the nation of glass containers, and since Cont Can is the second largest manufacturer of metal cans in the country, the government had maintained that the merger would eliminate an important competitive factor from the container industry. Continental agreed on July 29 to acquire the stock and assets of the glass company for 990,140 shares of common stock, and the agreement was approved by Hazel-Atlas stockholders on Aug. 7.

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New Aerosol Patents

The data listed below is only a brief review of recent patents pertinent to the readers and subscribers of this publication.

Complete copies of these patents may be obtained by writing to the publisher of this magazine, Aerosol Publications, Box 31, Caldwell, N. J., and remitting 50c for each copy desired. For orders received outside of the United States the cost will be $1.00 per copy.

2,757,963 Spray Head for Valves. Patent issued August 7, 1956 to Leonard B. Drell, Glencoe, Ill. An aerosol bomb comprising a container, the top of said container having side walls and a neck portion, a self-sealing valve in said neck portion, a resilient gasket in said valve having a vertical bore therethrough, and a removable spray head for operating said valve, said spray head comprising a top portion, a dispensing tube extending downwardly from said top portion, said dispensing tube being frictionally held in said vertical bore when said spray head is in valve-operating position, a finger depending rearwardly from said top portion, said finger being of sufficient thickness to be frictionally held in said vertical bore to position said spray head in a non-operating position, and a web extending downwardly and rearwardly from said top portion, the bottom edge of said web frictionally engaging said container side walls when said finger is positioned in said vertical bore to securely hold said spray head in said non-operating position with said dispensing tube in a position of drainage.

2,757,964 High Pressure Fluid Dispensing Devise. Patent issued August 7, 1956 to Tonjes A. C. Both, Stratford, and Lester C. Morton, Danbury, Conn., assignors to Bridgeport Brass Co., Bridegport, Conn., a corporation of Connecticut. An adjustable spray device comprising a conduit member having a plurality of spray openings therein, a coupling nipple having a passageway therethrough and being fitted to said member, an annular clamp rotatably mounted on said nipple, a cap fitting detachably secured to said nipple for closing said passageway, said nipple having a key on the outer periphery thereof, said fitting having an axially extending key slot adapted to receive therein said key whereby said nipple and said fitting are held against relative rotational movement, and a positioning support detachably clamped onto said fitting for retaining said nipple in a selected angular position, said port the conduit at a position between adjacent perforations; said wall of each holder being formed to provide at least one radial asymmetry adjacent the opening therein for engagement with the radial asymmetry of the conduit wall to constrain the conduit against angular movement about its axis, and each holder having a portion of extended surface area for bearing engagement with a fixed support.

2,758,969, Foam Forming Composition, Patent issued August 14, 1956 to Joseph M. Perri and David Y. Dollman, West Chester, Pa., assignors to National Foam System, Inc., West Chester, Pa., a corporation of Delaware. A foam forming liquid solution adapted for use in the production of mechanical fire-extinguishing foam consisting essentially of: an amine-fatty acid foam forming soap wherein the amine is a mixture of mono- and triethanolamine and the fatty acid is a mixture of stearic and myristic acids, aluminum lactate, and a solvent medium for the foregoing components of water, isopropyl alcohol, and chloroform, providing a clear homogeneous solution; the foregoing components being present in the approximate quantity relationship of 13 pounds triethanolamine, 2.0 gallons mono-ethanolamine, 8.5 pounds stearic acid, 64.5 pounds myristic acid, 7.0 pounds aluminum lactate, 7 gallons isopropyl alcohol, 2.5 gallons chloroform, and 9.75 gallons water.

2,759,026 Process for Fluorination of Hydrocarbons. Patent issued August 14, 1956 to Rush F. McCleary, Hopewell Junction, N. Y., assignor to the Texas Co., New York, N. Y., a corporation of Delaware. A process for fluorinating a hydrocarbon compound of the group consisting of hydrocarbons and halohydrocarbons capable of fluorination which comprises contacting said hydrocarbon compound in the vapor phase in a conversion zone with a fluidized suspension of solid porous carrier particles, introducing liquid SbF_5 into said conversion zone, effecting contact of said hydrocarbon compound with said carrier particles and said SbF_5 at a temperature between 100 and 292° C., said temperature being below the melting point of SbF_5, at a pressure from atmospheric to about 1,600 p. s. i. g. and at a space velocity of 0.4 to 3.0 volumes of total gas vapor per volume of fluidized suspension per hour, effecting conversion of said hydrocarbon compound to a fluorine-substituted compound and reduction of said SbF_5 to solid SbF_3 during said contact, said SbF_3 being deposited on said carrier particles, continuously removing said fluorine-substituted compound from said reaction zone, continuously withdrawing said carrier particles containing SbF_3 from said reaction zone, contacting said mixture of carrier particles and SbF_3 with gaseous fluorine in a separate regeneration zone whereby said solid SbF_3 is converted to SbF_5 and continuously recycling said SbF_5 and carrier particles to said reaction zone.

(Turn To Page 42)

Aerosol bouquets

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Who's Who in the Aerosol Industry

Harvey C. Tull, manager of Aerosol Products of the Crown Cork & Seal Co., Inc., Philadelphia, was first given the responsibility of developing the then revolutionary aerosol package in the fall of 1946. For some time he personally handled the sales, advertising, and publicity for these cans, and during the crucial period of development was looked upon as a stabilizing influence among loaders and marketers during the industry's early growth.

Though Mr. Tull returned to other sales management duties in 1951, early this year Crown announced his appointment as manager of Aerosol Products. In this capacity he is responsible, at a staff level, for the promotion, marketing, and distribution of Crown's Spra-tainers and their new fabricated aerosol containers. Working closely with suppliers, fillers, manufacturers, and marketers, Mr. Tull's interest ranges from selection of raw material, manufacturing, and new product development to relations with the consuming public. He has been associated with Crown for twenty years. Mr. Tull is a member of several CSMA Aerosol Division Committees.

Robert J. Thompson, sales director for the "Kinetic" Chemicals Division of Du Pont's Organic Chemicals Department, has a background of refrigeration engineering dating from 1919. But he started his business career as a railroad construction clerk.

After three years with the Chicago, Milwaukee, and St. Paul Railroad, he joined in 1915 the Dayton Engineering Laboratory, a unit of General Motors Corporation. After working as a draftsman and design engineer, he became associated with the company's program for the development of household and com-

mercial electric refrigerators. He was made commercial sales engineer for Frigidaire in 1925 and two years later was sent abroad.

In September of 1931 Mr. Thompson joined Kinetic Chemicals, Inc., a Du Pont subsidiary. He took part in the development, engineering adaptation, commercial introduction and sale of "Freon" fluorinated refrigerants, and of "Freon" propellants since introduction of aerosol products during World War II. In 1945, he was made technical sales manager, and, three years later was named director of sales for Kinetic Chemicals, Inc. He continued in that capacity when operations were integrated with those of Du Pont's Organic Chemicals Department in July, 1950.

Born December 18, 1892, in Arcanum, Ohio, he attended Steele High School in Dayton, and later completed a mechanical engineering course from I.C.S.

Mr. Thompson is a fellow of the American Society of Refrigerating Engineers and has been chairman and vice-chairman of the Philadelphia section of the society. He has also been vice president and president of the Compressed Gas Association.

Philip Meshberg is the inventor of the Emson metering valve, currently being used on many aerosol products, and in addition holds patents on other types of products. Connected with the manufacturing field most of his life, he is experienced in designing, tooling, and producing metal and precision products, and during World War II manufactured aircraft and gun breech mechanism parts and tools for drawing shells for the Army.

In 1946 he entered the houseware field, making items out of aluminum, and in 1949, American Metal Products Co., Inc., of which he is a principal, began the manufacture of aluminum containers for aerosols

(*Turn To Page* 44)

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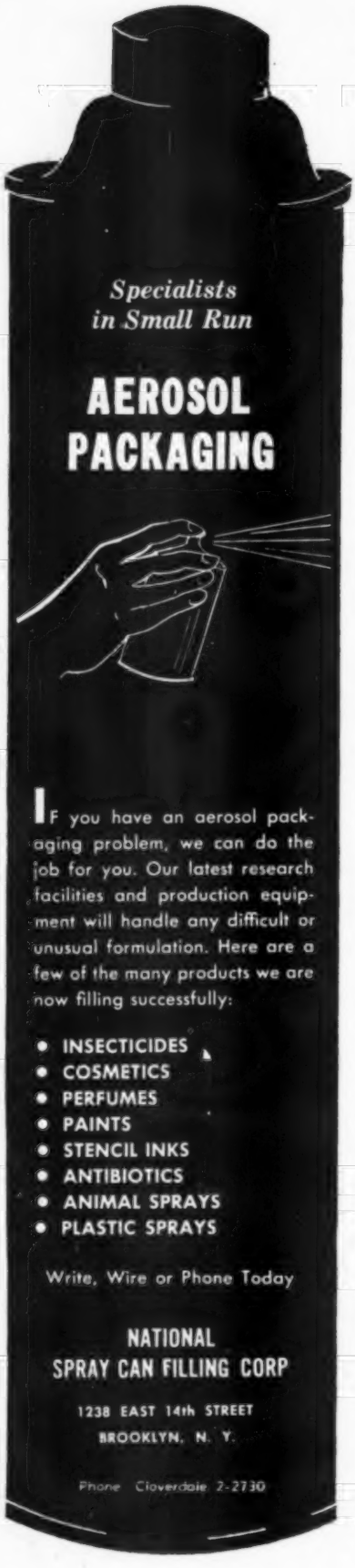
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New Patents

(*From Page 39*)

2,760,680. Liquid Meter Operated Means for Controlling Valves. Patent issued August 28, 1956 to John Fraser, Tolworth, Surbiton, England, assignor to Avery-Hardoll Ltd., Tolworth, Surbiton, England. Means for delivering liquid in predetermined quantities comprising a meter, a self-closing valve controlling the flow of liquid through the meter, retaining means to hold said valve open, resilient means acting on said retaining means to oppose release of the valve, screw-and-nut mechanism comprising a screw element and a nut element, rotary drive means actuated by said meter to rotate one of said elements, said other element being restrained against rotation by said retaining means, co-operating abutments on said screw and nut elements adapted to engage one another when one of the said elements is in a predetermined position relative to the other to rotate the other of said elements and release the retaining means so as to permit closing of the valve, and means for manually rotating said meter-rotated element.

2,760,691. Plastic Nozzle Mounting and Method of Assembling Same. Patent issued August 28, 1956 to John Henchert, River Forest, Ill., assignor to Continental Can Co., Inc., New York, N. Y., a corporation of New York. In a container structure, a plastic nozzle comprising a tubular body and an outwardly extending abutment flange at its lower end extremity, a metal container wall having a neck upstanding therefrom and embracing the nozzle body with the abutment flange placed firmly over the juncture of the neck with said wall, said neck having an upper terminal edge indented in the nozzle body, and a plurality of elongated ribs extending therealong in parallel relation to each other and the axis of the neck and spaced about the circumference of the neck and indented into the nozzle body to prevent turning thereof in the neck when screw cap closures are applied thereon.

2,760,701. Apparatus for Filling Tubular Containers. Patent issued August 28, 1956 to Charles F. Phelps, Chicago, assignor to Paul K. Becker, doing business as Sumersett Products Co., Chicago. In a machine for supplying a semisolid material to a succession of containers each closed at one end, the combination of means at a filling station to feed the material under pressure, a first movable member having a plurality of nozzles which successively register with the filling station, a second member movable at the same speed as the first member and including a plurality of container receiving pockets each of which is coaxial with a companion nozzle, means at a loading station for depositing a container into successive pockets as the second member passes thereby, means for telescoping each deposited container over its companion nozzle when out of registration with the filling station to place the latter's delivery end adjacent the closed end of the container, and means operable during registration of a nozzle with the filling station to provide a yielding restraint on the associated container as it is retracted from the nozzle by the pressure of the supplied material.

Trade Mark Applications

Applications for registration of the following trademarks were published in recent issues of the *Official Gazette* of the U. S. Patent Office. Notice of opposition to registration of any trademark must be filed within 30 days of publication of the application in the *Gazette*, and must be accompanied by a fee of $25.

Surgeosil in bold face letters, for solution having lubricating properties in propellant containers to be applied to surgical, dental, laboratory and other instruments and equipment, as a preservative and rust inhibitor, as a disinfectant, deodorant, and concentrated bactericide, and as a surface

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Patent Practice before U.S. Patent Office

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Booklet and form "Evidence of Conception" forwarded upon request.

germicide. Application filed No. 8, 1955 by Rals Laboratories, Cleveland Heights, Ohio. Claims use since June 1, 1955.

SAFE 2-U in heavy bold letters, for insecticides packaged in pressurized containers. Application filed July 29, 1955 by Demert & Dougherty, Inc., Chicago. Claims use since July 10, 1955.

GOLDEN SIX SPRAY in medium script; for glass cleaning spray preparations that clean and polish in one operation. Dec. 8, 1955 by Harry J. Tyson dba Deutsche Industrie Bavaria, Denver, Colo. Claims use since Nov. 1, 1955.

SURE-SPRAY in heavy script slanted at angle; for atomizers. Filed June 16, 1955 by Sure-Spray Atomizer Corp., New York. Claims use since Feb. 1, 1955.

SILVER SHIELD in upper and lower case bold letters in two lines; for anti-tarnish spray. Filed June 8, 1956 by Quality Chemical Corp., Forest Park, Ill. Claims use since Jan. 12, 1956.

Three Phase Aerosols

(*From Page* 15)

ond or two until the pressure collapses. This behavior is analogous to that of two phase packages.

In certain rare instances it may be desirable to retain the propellant in the aerosol. Firms experimenting with medicinal sprays in glass aerosols have tried the expedient of tinting the propellant layer with microgram amounts of oil-soluble F.D.&C. or D.&C. dyes. In this way the position of the liquid interface is immediately evident.

Economics

Depending on grade, prices in cylinder amounts of normal butane lie between 26 to 66% of those for the same quantities of the lowest cost halocarbon having a comparable pressure. The weight of normal butane required for proper loading of a three phase aerosol has been found to be about one half that required for sym. dichlorotetrafluoroethane. Aside from package improvements, the combination of these factors gives economies as high as eight to one through the use of a hydrocarbon propellant.

From Here On

As the science of corrosion fighting advances, three phase aerosols in metal containers will certainly increase in quantity and variety. Water-based mothproofers, bug killers, sanitizers and plant sprays are now under study. Garment sizings, a few food products and many personal products offer exceptional promise. With glass, coated glass and plastic containers, horizons are even wider. Three phase colognes and pharmaceuticals offer a most attractive future market.

Better three phase valves are coming. Better cans are coming. Ones that will withstand higher pressures. Delivery rates can be controlled with good accuracy. Particle sizes are being refined; made smaller. Is it reasonable to wonder if the future will hold three phase aerosols with sprays equal to those of any two phase products we have today?

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9. U. S. Patent (2,705,661) (1955).

Packaging Forum

(*From Page* 28)

in the region of 300 to 420 millimicrons. It is the wave lengths in this region that are of the greatest economic importance, since these are the rays most responsible for deterioration of commercial products. The wave length of 556 millimicrons in the yellow portion of the visible spectrum is the region of highest visibility. The ideal container, combining high visibility with radiation protection, would be one which would screen out all radiation up to the yellow, and then allow 100% transmission of the yellow. It is of course impossible to achieve this ideal situation, but the new radiation screen incorporated in the special Wheaton plastic coating closely approaches the ideal situation, Mr. Marks stated.

He showed data which indicated that in the 360 to 380 millimicron range the special plastic coating transmits no ultraviolet light whatsoever, as compared with 2% transmission through amber glass. Yet a comparison of visibility at 580 millimicrons of the two container types showed 80% visibility through the plastic coating as compared with 55% for the amber glass.

EQUIPMENT for the aerosol industry was shown in a number of the exhibit booths in the Packaging Machinery and Materials Exposition

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which was held concurrently with the forum, the exposition being held in Cleveland's Public Auditorium.

Alpha Engineering and Machine Works of Mt. Prospect, Ill. displayed their entire line of aerosol filling equipment, including the 500 Model aerosol pressure filling machine, 110 Model crimper, and aerosol bottle valve roll capping machine. In addition to an operating aerosol filling line, Alpha displayed several pieces of aerosol test equipment. Information was also available at the Alpha booth regarding the company's service for custom designed aerosol equipment.

Exact Weight Scale Co., Columbus, Ohio, displayed their Model 1200 Selectrol, a completely automatic machine that weighs, and sorts aerosol units into precise over, under or correct weight groups. Designed to eliminate costly manual weighing and spot checking, the machine's conveyor system passes aerosol containers over a sensitive scale. If the weight of the unit is correct, it is quickly passed along the production line. If however, an incorrect weight is registered, a swing gate automatically sorts the defective unit to one side or the other depending on whether the register is over or under the specified weight.

Consolidated Packaging Machinery Corp., Buffalo, N. Y., displayed their H-O-F automatic capping machine. Rated at speeds up to 300 units a minute, it will handle all types and sizes of caps and containers currently in use.

Burt Machine Co., Baltimore, Md., displayed their new Burt Labeler for for Aerosol cans. A completely automatic machine, it will handle either right or left hand laps on any size can currently in use.★

Aerosols Overseas

(*From Page* 21)

prices. In any event, we look for some valve and can price adjustments in the near future.

The duty barriers European countries have set up against themselves play a tremendous rôle in determining the movement and flow of goods. Contrary to the popular US belief, European duties are high, higher than corresponding US duties on the same products. On aerosol valves, for example, even in that free-trade nation, England, the duty is 25 per cent; in France 40 per cent; in Italy about 35 per cent; in Denmark, with luxury taxes and all, about 50 per cent; and in Germany now between 14 and 18 per cent. Switzerland has the lowest duty of all, based on weight. On tinplate and black-plate cans, duties are similarly high.

Aerosols in Holland

There is great interest in aerosols in this fine little country, greater than the Hollanders themselves realize. For their aerosol industry, everything except their product ingredients must be imported—cans, valves and propellants. Presently, they have four loaders, and plans are afoot for the establishment of quite a few captive stations. Their big perfume essence houses, Polak & Schwarz, Polak's Frutal Works and N. V. Chemische Fabriek Naarden, are specializing in aerosol-tested perfumes, and two of them have published fine little booklets on aerosols. Polak & Schwarz put theirs out in seven different languages following a meeting in Holland of their international sales force specifically on the subject of aerosols. Their coverage is extensive and all South American representatives attended, even though aerosols are relatively undeveloped in that part of the world.

One point that struck us was the number of Crown Can containers, both 6 and 12 ounce, all imported. Holland has any number of container manufacturers, and also produces its own tin-plate and black-plate on modern continuous mills. If they knew their own aerosol turnover, they would probably be producing their own cans.

Together with a business associate (Dutch) who had told us that aerosols were practically unknown in Holland, we visited the next drug store on the street, in Rotterdam. In the window were five different aerosol products loaded by three different companies. By the time we had finished with the interior of the shop, we had counted a total of 17 different products in metal cans and glass bottles. The sales-girl reported brisk sales. Price example: a Dralle insecticide in a 12 ounce Crown Can at Guilders 4.25 ($1.20).★

Editorial

(*From Page* 11)

Agricultural Chemicals Association, in closely allied fields, have found such handling to be both economical and efficient.

Whatever decision the board of CSMA may make as to how best to implement such a program, we hope they decide to go ahead on the necessary scale with the current proposal. Certainly there is a big job to be done for this growing industry. In the short time we have been publishing this magazine, it has been impressed strongly upon us that there are far too many people who produce a blank stare when the word "aerosol" is mentioned. Maybe they are just confused, what with aerosols being termed as "bombs" for one product, "sprays" for another and "mists" for still another. But it is a truism in selling that it is an awfully hard task to sell a potential buyer a product when he doesn't even know what it is.

Who's Who in Aerosols

(*From Page* 41)

on a contract basis. Though the company discontinued its efforts in this field because of the aluminum shortage during the Korean War, Mr. Meshberg remained keenly interested in the expanding aerosol field.

With the successful development and manufacture of his metering valve, Mr. Meshberg recently set up Emson Research, Inc., Bridgeport, Conn., to handle the aerosol valve and container business.

Pressurized Sprays

(*From Page* 31)

spray but also as a fly, mosquito, roach and ant killer. Such developments are only the first; a number of others might include the addition of a growth stimulant, a blossom set compound or a leaf shine. One plant spray formula was found to make an excellent pet spray and, after thorough testing, has been

marketed as a dog and cat spray which, since it contains no kerosene, is safer for use on cats than previous pet formulas.

Competition among manufacturers demands a constant improvement of product. Attempts to juggle all the new "plus" factors being suggested for plant sprays are sometimes fascinating and sometimes overwhelming.

Each improvement or development, as in other fields of pressure packaging, leads to new suggestions and new improvements. The pressurized plant spray is an excellent example of this, both from the encouraging aspects of consumer acceptance and growth and also from the more confusing viewpoint of a manufacturer who may one day demand the ultimate in plant sprays and then be unable to find room on the label for such a name as "SMORGESBORG'S HOUSEHOLD FLY, MOSQUITO, ROACH, ANT, PET, PLANT, FUNGICIDE-INSECTICIDE-MITICIDE-GROWTH STIMULANT-FRUIT SETLEAF SHINE-BACTERIOSTATIC-DEODORANT SPRAY.★

Reusable Valve

(*From Page* 19)

There appears to be a prejudice in the U.S.A. against foreign inventions, with the idea that home products are best. It cannot be denied however that some of the keenest scientific brains are to be found in Europe. We would welcome enquiries from American manufacturers who have Associates in Great Britain, and we would be happy to give them every assistance with the development of this valve.

We must say that the aerosol field has been restricted in England due to the outrageous and excessive purchase tax of 90% on the wholesale value of any perfumery products. Consequently, the growth of aerosols has not flourished in England as it has in the U.S.A. Because of this deterrent, progress has been impeded. Nevertheless, as soon as the public realizes the great improvement and economy in this method, we predict a bright future for the Vapsol reusable valve.★

Aerosols in Sweden

(*From Page* 33)

some time, but apparently as of this date no definite decision has been taken.

Loading costs vary considerably depending upon the product involved and the number of units under consideration. As is common in most overseas territories, the unit loading cost is generally somewhat higher than in the United States.

In any consideration of the cost of a completely made local aerosol package, much depends upon the foreign exchange position of the country involved. Sweden is in the fortunate position of being relatively unrestricted insofar as sources of supply are concerned, while Norway has had to obtain most of its containers and valves from England, and Denmark has confined most of its purchases to Germany. Finland, which has one contract filler, uses aluminum containers with staked-in valves of the Continental type which are produced locally. For this reason American firms interested in introducing their aerosol products to Scandinavia may well find Sweden to be the better choice in which to commence operations. Expansion to the neighboring countries can then be considered in the light of experience gained in Sweden.

The general procedure followed in introducing a new aerosol product to Sweden, as well as to any other of the Scandinavian countries, is for a small quantity (between 500 and 5000 units) to be imported to test customer appeal and reaction. If it appears that the preliminary introduction has been successful and that continued recurring demand would exist for the product under consideration, costs should be calculated based upon local filling and a study made as to whether or not the retail price would be such as to insure consumer acceptance from a strictly economic point of view.

With the exception of shaving cream, all imported aerosol packages are subject to a 15% ad valorem duty, and for many cosmetics a higher luxury tax is also often levied. The fact that shaving creams are admitted duty free puts them in a special category and accounts partially for the fact that these particular imported products are still being marketed. Other types of pressurized products introduced as imported items have never really gained a substantial foothold in what is definitely an expanding aerosol market.

The concluding moral to this report, if any, is that American aerosolers should be aware of the fact that Sweden is also producing other types of "bombs" besides blonde pulchritudinous ones!★

For Maximum Safety in Aerosol Use

make sure that your labeling carries the following five-point caution statement:

1. **Contents under pressure**
2. **Do not puncture**
3. **Exposure to high temperatures may cause bursting**
4. **Keep at room temperature — away from direct sunlight, radiators, stoves, hot water and other heat**
5. **Never throw container into fire or incinerator**

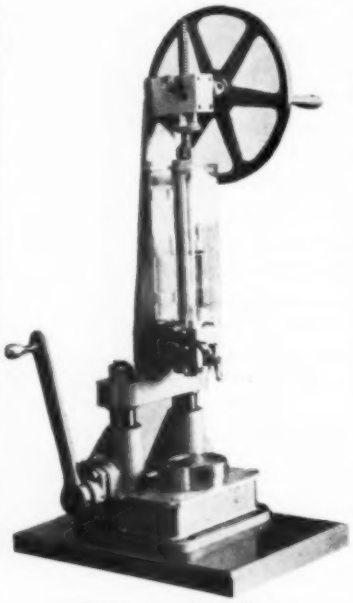
Do Your Part To Keep The Aerosol Industry's Safety Record Spotless!

•

AEROSOL AGE

DEVELOPED FOR THE CONSULTING LABORATORY, THIS APPARATUS IS THE ULTIMATE IN FUNCTIONAL DESIGN AND PERFORMANCE

Our apparatus division has been set up to make all items available to the industry. Prices and descriptive literature on request.



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Propellant Manifold for Manipulator
Hand Operated Vial Capper
Change Parts for Vial Capper
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Hydrostatic Test Units
Karl Fischer Pressure Titration Cells
Dead Stop Indicator for Karl Fischer Titrameter
Density Units
High Pressure Test Bombs
Can Sampling Units — Piercing or Valve Actuating
Pressure Gauging Unit — Pressure Balance or Water Filled
Flammability Set
Test Ovens — Standard or Custom Built
Instantaneous Chiller Units — Mechanically Refrigerated
Electric Hot Water Test Bath Standard or Custom Built
Hot Water Bath Transfer Baskets Safety Top Tank Racks
Table Tank Rack Combinations
Safety Screen Tubes for Glass Pressure Tubes
Plastic Protective Screens
Gloves
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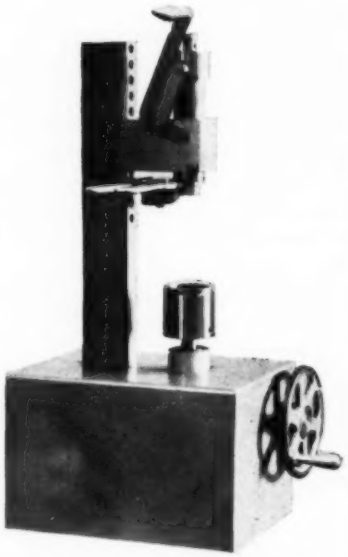

Foresman Hand Operated Vial Capper

PRESSURE TESTER for Aerosol Containers

as illustrated
$8.75

specify 60,100 or 160 pound gauge

other items:

snap-on screw tops for aerosol cans

cold and pressure fillers

glass bottle cappers

stainless containers, Formica tops & cabinet bases

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Want a good man? . . .

or a good job?

Have you something to sell?

Looking for something to buy? . . .

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The only Company devoted exclusively to development and research on Aerosols

CLASSIFIED ADVERTISING

Rates for classified advertisements are ten cents per word, $2.00 minimum, except those of individuals seeking employment which *Aerosol Age* will run without charge. Check must accompany all classified advertisements. Address all replies to Classified Advertisements with Box Number, care of *Aerosol Age*, Box 31, Caldwell, N. J. Closing date: tenth of month preceding month of issue.

Research and Development executive, experience in aerosols, cosmetics, pharmaceuticals and foods, seeking position offering responsibility and opportunity for future. Address Box 105, c/o AEROSOL AGE.

Young Specialty Chemist, B.S. with varied experience in aerosol field desires formulating position with future and responsibility. Address Box 106, c/o AEROSOL AGE.

Aerosol Executive seeks position offering responsibility and opportunity for promising future to a man who has wide experience in the field. Address Box 107, c/o AEROSOL AGE.

Sales Representative for the aerosol industry. Currently a district sales rep. for national manufacturer in unrelated industry. Ambitious, self-starter, personable, young. Address Box 104, c/o AEROSOL AGE.

U. S. Representative Wanted: Largest manufacturer of aerosol equipment in Europe seeks representation in the United States. Complete line includes filling machines, valve clinching machines, electrically heated test bath, dust and particle remover, laboratory testing cabinet, compressors, etc. Correspondence is invited from firms with facilities and acquaintance with the aerosol industry in the United States which would fit them to act as exclusive U. S. distributors for this complete and well-known line of aerosol equipment. Address Box 101, c/o AEROSOL AGE.

Foreman — Supervise and maintain new aerosol line with general knowledge of other packaging. Philadelphia area. Salary open. Reply in confidence. Address Box 100, c/o AEROSOL AGE.

Build New Canada Plant

The Nichols Chemical Co. has announced that it will build Canada's first chemical plant to produce liquid hydrofluoric acid, a base chemical for aerosol propellants. Construction of the plant, at Valleyfield, Quebec, is scheduled to begin immediately, with technical assistance in the construction and operation to come from Nichols' U. S. affiliate, General Chemical Division of Allied Chemical & Dye Corp., New York.

At present, all hydrofluoric acid for Canada is imported from the U. S. and Europe.

FTC Issues Consent Order

The Federal Trade Commission recently issued a consent order prohibiting Revlon Products Corp., New York, from discriminating among customers in the granting of sales promotion aid. The order follows an FTC complaint, issued in February, charging the company with failure to make promotional allowances and services available to competing customers on proportionally equal terms.

WANTED — CHEMISTS, ENGINEERS, MECHANICS

Unusually Interesting Work in Aerosols

The nation's largest aerosol manufacturer needs technical people for plants in New York, Chicago, Los Angeles.

CHEMISTS — Research and Control
ENGINEERS — Creative men who can design equipment
MECHANICS — Capable of maintaining production machinery

These men should have some related experience, but we will train the right people. Our firm is 20 years old with young aggressive leadership. This is an outstanding opportunity to join the top company in a rapidly expanding industry. Submit complete background resume.

G. BARR & CO.

3601 S. Racine Avenue
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THE MAGAZINE OF PRESSURE PACKAGING

Your Advertisement Here . . .

will carry your sales message to potential buyers throughout the entire aerosol field. If you supply materials, equipment or services to any section of this rapidly expanding market, AEROSOL AGE is your logical first selection as an advertising medium, because:

- *it gives complete coverage of the entire aerosol market*
- *no waste circulation*
- *minimum rate*
- *it is the only publication edited specifically and exclusively for the aerosol field*

Circulation — 4500

Advertising rates on request

AEROSOL AGE

(Affiliated with Industry Publications, Publishers of *Agricultural Chemicals and Modern Lithography*)

P. O. Box 31

Caldwell, N. J.

***N. Y. Phone:* BArclay 7-7121**

***New Jersey Phone:* CAldwell 6-5520**

Editor's Mailbag

(*From Page* 8)

pressure, but which on storage could develop pressures in the range cited?

W. J. Pollock
PHOENIX METAL CAP CO.
Chicago, Ill.

Mr. Pollock's query was referred to Montfort A. Johnsen of Peterson Filling & Packaging Co., chairman of the C.S.M.A. committee that developed this method. Mr. Peterson replied as follows:

With reference to the paragraph under consideration: "Since the I.C.C. requires a metal container for compositions above 25 psi-g. at 70°F.—" "There is a very definite trend to limit pressures to 15 psi-g. at 70°F.—;" we can say that only the first statement is official with the I.C.C., and then, it is limited—as we understand it—to aerosols. It would not for instance include "pop bottles," beer bottles and so forth. The second sentence merely presents an attitude on the part of many aerosol merchandizers to present a safer package to the public.

We understand you are interested in learning the I.C.C. attitude on products packed at atmospheric pressure, but which on storage could develop pressures between 15 psi-g. at 70°F. We would suggest that the packaging conditions are immaterial—many aerosols are packed at atmospheric pressure—and that the highest pressure conceivable during storage would be the one to go by, as long as the temperature is 70°F.

Certainly a more authoritative answer to your question could be obtained by writing to Dr. W. Mc Kenna, Bureau of Explosives, Association of American Railroads, Chemistry Laboratory, South Amboy, N.J.

In an article on aerosols for cosmetics and toiletries, which I have just written for *Beauty Fashion*, I quoted part of the editorial in your June issue relating to redefinition of "aerosol." The editorial is comforting to me because the term had become very confusing.

Aerosol Age impressed me by being so mature at birth! And everyone in the industry with whom I spoke referred me to it. Congratulations, not only on the quality of the publication, but also on its being so prompt, so on time to fill a need.

(MRS.) VIRGINIA MEREDITH

Our apologies to Prentiss Drug & Chemical Co. for the omission of the color plate in their advertisement in our September issue (Pg. 42). The advertisement is repeated this issue (Pg. 7) as it should have appeared last month.

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- In a rapidly expanding market like the aerosol field, only a magazine devoted specifically and exclusively to aerosols can keep you up to date on latest developments.
- This sample copy will give you an idea of the type feature articles by industry authorities — and complete news coverage — which AEROSOL AGE will bring you every month.
- Why not send in your subscription card right now to make sure that you get every issue of AEROSOL AGE — a magazine that's indispensable to your business.

• *Use the handy postpaid subscription card on page* 43.

AEROSOL PUBLICATIONS **CALDWELL, NEW JERSEY**

OVER THE TRANSOM

THREE-PHASE aerosols have their critics as well as their proponents. Following the appearance of our first article on three-phase aerosol systems last month, we heard from a couple of custom fillers who felt that some of the negative aspects of the triple-phase products should be pointed out too. One noted the common complaint that in three-phase systems it is difficult to maintain a uniform pressure in the container. If the user sprays long enough and fast enough, pressure drops steadily and eventually the spray will stop until an equilibrium is again established between the liquid propellant on the bottom of the container and the gaseous propellant in the head space. Boiling chips are one of the expedients used to meet this problem.

Another shortcoming of the three-phase products is that length and positioning of the dip tube is rather critical. Tilting the container may cause the dip tube to extend into the liquid propellant, thus diminishing the reserve supply and resulting in the undesirable spraying of propellant rather than product. If the dip tube is positioned too high in the aqueous phase, the full contents of the container can not be dispensed, and if it is too low, too much of the propellant will be lost and propellant power will disappear before the container is exhausted.

Still a further criticism is that in the three-phase products it is not possible to maintain close control over spray characteristics. With conventional aerosol systems, spray characteristics are a function of type and concentration of propellant, as well as of the valve, and a wide variation in spray characteristics is possible. With three-phase products, the propellant is used only as a pressure head to force the product through the valve orifices, and the atomization of the particles is a function of the valve alone. This results in a coarse spray, and break up of the particles necessarily depends on valve alone.

The above criticisms, one reader points out, do not mean to imply that the three-phase system will not work, but rather that it is a rather cumbersome way of achieving results that can be better accomplished in other ways. "Present developments are going to make it possible to spray aqueous products using a two-phase system," our informant points out. "When these developments become a reality, there will no longer be any need for the three-phase systems."

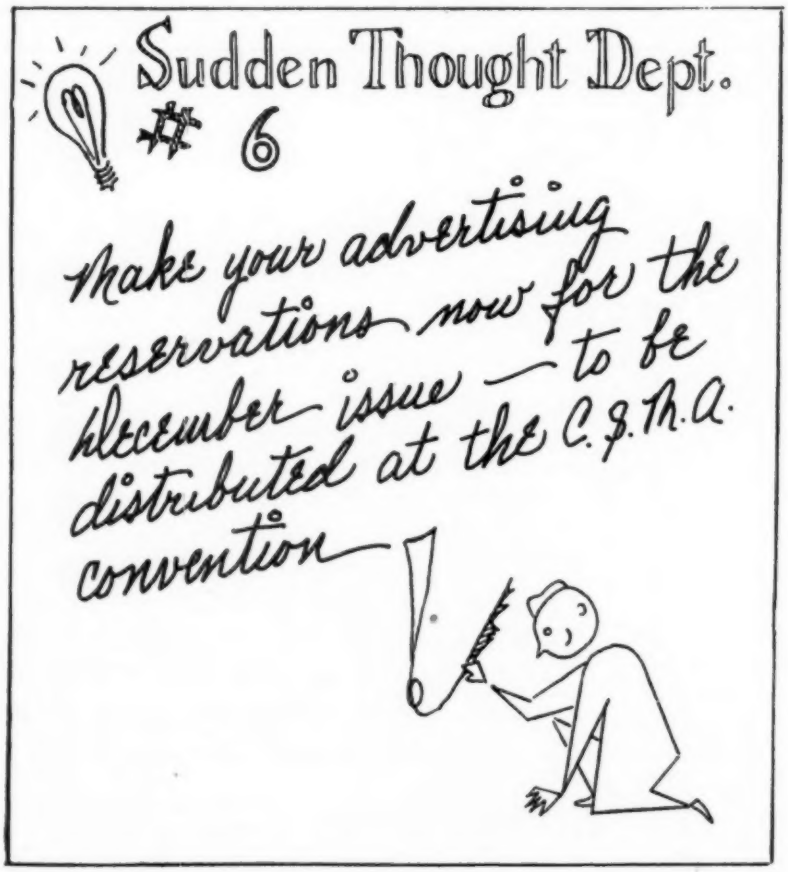
This month, however, as we continue our coverage of three-phase aerosols, Montfort Johnsen of Peterson Filling offers some very optimistic predictions on the future of the three-phase products. He predicts better valves, better containers, more accurately controlled delivery rates, smaller particle sizes, and a market outlet that shows promising signs of expanding in several different directions. So, you pays your money and you takes your choice. When the experts disagree, we at *Aerosol Age* will just plan to do our best to present both sides of the coin in a manner as unbiased as possible.

* * *

We're happy to report some very nice comments on the article in our September issue, "Aerosol Therapy" by John J. Sciarra. One of the container companies expressed an interest in obtaining reprints for distribution to the drug trade. From reports that reach us, it is only a matter of months before there will be a wide variety of pharmaceutical aerosols coming on the market. Aerosols for feminine hygiene are an early possibility.

* * *

Besides reaching everyone currently in the aerosol field, we are most anxious to get copies of AEROSOL AGE *into the hands of those now on the fringe of the market but perhaps thinking of putting out an aerosol product or two in the near future. A publication such as ours, can serve as a central point for exchange of information and a ready medium for those outside the field to use in finding out more about aerosols. This function should be particularly useful at this stage in helping to expand the market. If any of our present readers care to let us have the names of individuals who could profit from seeing copies of representative issues of* AEROSOL AGE, *just send them along to us. We'll be glad to pick it up from there.*


Sudden Thought Dept.
6
Make your advertising reservations now for the December issue — to be distributed at the C.S.M.A. convention

Current Facts on AEROSOL AGE To Help You in Schedule Planning For this Fall and 1957

EDITORIAL:

For the first time, here is a magazine which gives thorough coverage of the entire aerosol field — insecticides, cosmetics, personal products, paints, pharmaceutical and food aerosols. During our first five months of operation we have published 150 pages of top editorial material on all phases of the industry, and the response has been enthusiastic. The dozens of letters which reach us prove conclusively that AEROSOL AGE has been welcomed by the industry. It is, of course, the first publication dealing specifically and exclusively with matters of direct concern to the aerosol industry.

EDITORIAL QUANTITY AND QUALITY!

CIRCULATION:

Our circulation prospect list, developed from the customer and prospect lists of thirty leading suppliers is still being continually checked and refined against new lists. Our growing subscription list is particularly encouraging. Paid subscribers now number 1600 out of a total circulation of 4500 — and the list is growing steadily. (85% of our circulation goes to individual names.) We want to reach everyone with a real interest in the aerosol field, — and will be glad to have an opportunity to check your customer and prospect lists.

THOROUGH COVERAGE OF THE ENTIRE FIELD — NO WASTE!

ADVERTISING ACCEPTANCE:

Advertising response in our first five issues has been very good.

20 custom and contract packers using 33 pages.
9 container companies using 21 pages.
9 insecticide companies using 20 pages.
8 aromatic companies using 18 pages.
8 valve companies using 15 pages.
5 propellant companies using 13 pages.
10 equipment companies using 10 pages.

Practically all of the leading suppliers to the aerosol field are using AEROSOL AGE for a grand total of 130 pages of advertising in our first five issues.

ADVERTISING ACCEPTANCE FROM THE LEADERS!

Advertising Rates on Request

If you're interested in selling more to the Aerosol field — it only makes sense to concentrate in

AEROSOL AGE

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Give your aerosol insecticides EXTRA SALES APPEAL with Givaudan fragrances

Today's modern trend in consumer preferences demands a pleasant as well as functional insecticide and mothicide. A Givaudan fragrance – custom-made to fit your particular needs – will give your products that *extra* sales appeal that is so important.

As the largest producer of perfume materials in America, Givaudan maintains special laboratories devoted exclusively to the development of new and finer aerosol fragrances and the solution of problems in aerosol perfuming.

Our staff will gladly recommend, adapt or custom-tailor a fragrance that will give your aerosol insecticides a fresh, distinctive appeal in this fast-growing, highly competitive market.

GIVAUDAN-DELAWANNA, INC.
330 West 42nd Street, New York 36, N. Y.